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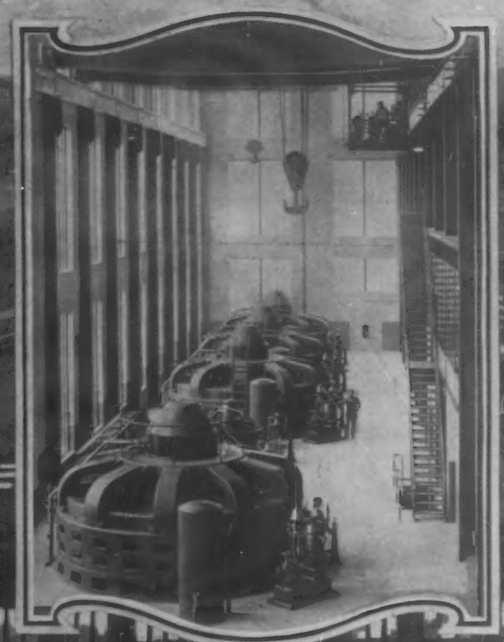

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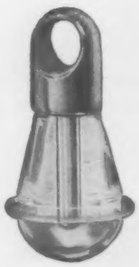
Radium! A convenience in your home A gold mine in your business

No. 750 Luminous Pendant, actual size. For attachment to any pull chain.



No. 2915 Luminous Pendant, actual size. A lighthouse for the pull cord. Pull ceiling switches, the strings of ventilators, etc., need this pendant.

Here is the Display Card for No. 750 Luminous Pendants. Makes a fine showing on the counter with its three colors—red, yellow and blue.

Any ordinary Bryant push button switch is better for being equipped with luminous button. Here is No. 2901 with it.

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Radium shines in the dark. You can see it. An object painted with radium paint is easily found in a pitch-dark room.

How it is used

Small pieces of glass or celluloid are painted with radium paint. Properly protected with glass or celluloid these are fastened to chains of pull sockets, buttons of push-button switches and levers of toggle switches. Upon going into a dark room you can instantly find the socket or switch.

What it costs

No. 750 Pendants to be attached to pull chains cost 20c. list each mounted on counter display cards of 50. Any Bryant pull socket can be equipped with permanently attached pendant like No. 750 for 18c. list additional. No. 2915 large pendant lists 55c. and is just the thing for ceiling pull switches in factories and offices. Any ordinary Bryant push-button switch or toggle switch can be supplied with luminous insert in button or handle for 25c. list additional.

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A "Yankee" (No. 2901) push button switch lists 35c. With luminous insert 60c., or 70% more. If every push button switch you sell has a luminous insert you make your regular profit on the extra 25c. Figure it out for your pull socket and flush switch sales.

Why it is easy to sell

Luminous locators are a real convenience. Real conveniences are wanted in every home. Many of the magazines and newspapers are devoting editorial space to the explanation of radium locators. You can't sell them without telling about them but sales will be made easily.

Where you can buy them

"Order from your jobber"

There are over 200 Bryant distributors in the United States and Canada. They all know about Undark luminous locators. Many of them have luminous pendants, sockets with luminous pendants, and switches with luminous inserts in stock.

THE BRYANT ELECTRIC COMPANY

BRIDGEPORT, CONN.

NEW YORK CHICAGO SAN FRANCISCO

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Journal of Electricity and Western Industry

A McGraw-Hill Publication

ROBERT SIBLEY, Editor

Associate Editors:
Norman S. Gallison
Clotilde Grunsky
George C. Tenney

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WANTED—A MOSES

THERE never has been so great an opportunity for profitable sales effort as that which faces the Electrical Industry in the West today. The American public is being sold to a greater degree than ever before on the uses of electricity in the home, so much so that one of our greatest electrical manufacturing concerns has recently reorganized its selling activities to place major emphasis not on apparatus or supplies but on its department of merchandising. The possibilities of electrical merchandising throughout the whole nation were never better and the eleven states west of the Rockies, due to unprecedented growth in population, in electrical development and unsurpassed building records offer even greater opportunities.

¶ Thoughtful men realize that if we of the electrical West are to reap the full benefit of these wonderful opportunities, we must discard working tools that we have outgrown. Open criticisms are being made that the present association activities tend toward intrigue; that they are not properly financed; that they restrict sales effort to channels that are artificial; that real constructive leadership is lacking on all sides; that those in charge are not representative of the entire industry; that the various associations are causing costly duplication of effort; that one all-embracing organization should be formed to take full advantage of the bright future immediately before us.

¶ There is a real need for rehabilitating the various organizations engaged in promoting such merchandising and contracting effort as has in the past rendered good service. To this end, the present organizations—among them the California Electrical Cooperative Campaign, the California Association of Electrical Contractors and Dealers and other similar activities throughout the West should be revitalized.

¶ We need at once full and authoritative information regarding the present channels of distribution. The aim of such reorganization, should be to set up an institution that will undertake a careful research analysis of the present channels of electrical distribution for such staple supplies as electric irons, for wiring and its accessories and for electrical specialties such as the electric range and the electric refrigerator. The names of all firms engaged in this work of every kind and character should be listed and classified. Definite standards should be established for all equipment, the workmanship involved in its installation, and for such inspection and adjustments as may be required thereafter.

¶ The privilege of some distinctive insignia or trademark should be granted to firms that agree to comply with such standards, with penalty of expulsion for failure to fulfill the requirements of membership. This institution should employ competent field workers who will teach dealers and retailers how to sell electrical merchandise, read specifications and properly estimate jobs and establish correct cost accounting systems. This institution should also take upon itself the responsibility for selling to the public the electrical idea of the industry as a whole. It should fearlessly combat present day evils and improper methods in vogue in merchandising and contracting now complained of on all sides, and any tendency toward stifling legitimate channels of trade and honest competition. Beyond all, its function should be educational, and to this end its greatest ideal, to be constantly held in view, should be to widen the channels of merchandising and never to restrict their growth so long as quality effort is adhered to by those seeking recognition.

¶ We are now witnessing the disorganization of organization, the conflict of organization with organization, and of organization with the so-called independents, that has so be-fogged the issue that it is time for dispassionate study of the situation as a whole, and for the clear thinkers to shuffle the cards, and give everybody a new deal. Our mail has been flooded with complaints, criticisms of everybody by everybody else. There is one conclusion that may be safely drawn at this time, and that is that the existing organizations have failed to accomplish their purpose. This does not mean that organization per se is the wrong idea. On the contrary, organization is the only solution of the difficulty. Organization means order, cooperative thinking, constructive progress, and the constant betterment of the industry, while disorganization means chaos.

¶ To do its part in helping toward the consummation of this end, the editors of the Journal of Electricity and Western Industry will conduct an independent field investigation of the merchandising problem in all its phases in the West, reporting the results of these investigations from time to time as fast as they can be prepared for publication. You, our readers, are invited, urged, to do your part. If you have anything on your mind, say it, through the columns of this paper. If, for any reason you so desire, your name will not be published, but no anonymous conmmunications will be considered. There is a big job to be done and it will take a big man or big men to do it.

¶ Who will be the Moses, who will lead the electrical merchandising industry out of the Egypt of disruption into the promised land of progress, peace and prosperity?

The Unmerging of Western Railroads

WILL the best interests of the West be served by the ownership of the Central Pacific by the Southern Pacific or by the Union Pacific? This is the question which is now concerning the Pacific Coast. There seems to be very little else involved in the present problem of railroad unmerging besides this issue. The Supreme Court has interpreted the law to mean that, for the past quarter-century, two western railroads have been operating together illegally. It has ordered that such joint operation terminate.

It seems to be generally acknowledged that the Central Pacific cannot long remain a separate unit. The advantages of a unified operation of railroad systems was established during the war period and the Interstate Commerce Commission has been expressly instructed to group the companies into a few competing units which shall offer the maximum of service to the country served. Professor Ripley of Harvard University, in presenting a plan for this grouping, included the Union Pacific and the Central Pacific in one unit. In revising his plan, the committee conducting the investigation grouped together the Southern Pacific and the Central Pacific. It is therefore a possible and a natural thing for the Interstate Commerce Commission now to give permission for the joining of the Central Pacific Railroad with either of the contending roads.

The untangling of the present alignment would present many difficulties. The Southern and Central Pacific own isolated sections of track in many sections of the West which could be of use only if operated in conjunction with lines of the other road. The railroad shops are the property of the Central Pacific, the entire equipment of refrigerator cars belong to the Southern Pacific—neither railroad has complete operating equipment. And yet it must be remembered that in 1912 the Southern Pacific was prepared to sell that section of the Central Pacific between Sacramento and Ogden to the Union Pacific and had worked out a method whereby this was practicable. Presumably through long term leases, and actual sales of track and property, a method of unscrambling could be worked out—the question is whether it is desirable.

California, Arizona and New Mexico seem united at the present time upon the basis that conditions should remain as they are, Oregon and Washington appear to be watching events and Utah in some respects favors the Union Pacific. The question of rates is not involved, except as the extra expense of reorganization might give a justification of higher freights, nor in general is there a question of favored routes. Shippers and passengers alike have complete choice of routes and there seems to be no evidence that they do not freely exercise that choice. The question seems to be one of service alone and under the head of service, the pioneering development of the country. It is well to remember this issue in any discussion of the situation and to remember, as well, that competition is not always the greatest stimulant to development. A road which serves one territory completely is usually best able to expend money in the promotion of its prosperity.

A Tangle in Accounting Straightened Out

THE transmission of hydroelectric energy over distances of hundreds of miles with the consequent serving of scores of communities en route, has long since made necessary in the west a more greatly extended system of accounting than is found necessary in the power company operations to the east of the Rockies. When it is remembered that one large power company of California serves a greater territory than the whole of New England with its two hundred odd utilities serving that district, one begins to get a faint glimmer of the differences involved.

This situation is somewhat more aggravated at the present time due to the necessity for meeting certain legislation in the West which requires knowledge of segregated cost statistics for different parts of the system of one company. Thus while a New York company may find its needs entirely met by keeping only one land account, one building equipment account, and so on down the list, a western company, particularly a California company, finds it most advantageous to have a far greater detail whereby the land account would be subdivided so that proper charges could be made against the power house, transmission line, distribution system and other segregated units.

In view of all these necessities in the West, it would seem best that provision be made in the national accounting standard so that this extended detail may be carried out in those communities where it seems best or where regulatory commissions demand it, and yet at the same time leave a simple framework as a basis which is not inharmonious with a national standardization of accounting. This is entirely feasible by properly extending the detail of accounts, agreeable to the general standards laid down by the accounting committee of the National Electric Light Association, in which due consideration is given to the recent findings of the accounting committee of the Pacific Coast Electrical Association.

Exchange Students Between Sweden and Pacific Coast

BACK of the phenomenal progress made by Japan in the past quarter-century has been the practice adopted by that country of sending students in scientific and engineering fields to every part of the world to study conditions and accomplishments in other countries. This is perhaps the most conspicuous example of the advantages of exchange students—but instances are not lacking in other fields which evidence the gain in practical knowledge as well as in international good feeling resulting from such a system.

On another page of this issue is a letter from a Swedish student who has gained much from a close

study of western conditions. He speaks of the advantages to be gained from such an exchange and suggests that western engineering men might find much of profit by a study of electrical development in Sweden, where high heads and long distance transmission present problems very similar to those of this region.

The suggestion is particularly addressed to the universities and the power companies—and it is to be hoped will find a sympathetic response. We of America are too prone to believe that we can assist others but cannot ourselves learn from the rest of the world. We have indeed accomplished wonderful things on the Pacific slope in the development of electricity—and for this reason a comparison with methods developed elsewhere, to meet similar problems, would be most valuable.

The Intermountain Electrical Exposition

THERE is to be an exposition in the Intermountain district Oct. 2-14 at Salt Lake City, under the auspices of the Rocky Mountain Electrical Cooperative League. This is not to be a mere passing exhibit of local proportions, but plans are being laid for an achievement that will by long odds eclipse any other similar undertaking that has ever before been attempted in that enterprising section of the West. The illumination features are to be especially attractive and are under the direct supervision of W. D'Arcy Ryan, known to the West as the creator of the famous Tower of Jewels at the Panama-Pacific Exposition in San Francisco in 1915.

Western manufacturers and western representatives of eastern manufacturers are urged to do all in their power to make this exposition a one hundred per cent success by having their own individual exhibits at this promising affair for the upbuilding of the electrical West.

A Chance to Vote for Higher Taxes

NO BURDEN will fall upon the tax payer from state ownership of power development, according to the proponents of the Water and Power Act of California. The statement on the face of it appears improbable to any one familiar with conditions of government ownership—and on close examination develops various aspects which should be understood by the voters of the state.

The bill as it is to be presented to the people involves the provision for a direct tax to be mechanically applied, should the proceeds from power development ever fail to pay the interest or principle on the $500,000,000 in bonds issued. "But rates will be charged so that there never is a deficit," say the advocates of this measure. There is one probability which they overlook in this statement of optimism. It has been the case with almost every government undertaking which has been constructed that the time of completion is greatly underestimated. In the case of the New York traction scandal, seven or eight years elapsed before the income bearing properties began to yield an income, the tax payer painfully providing the interest in the interim. The citizens of Seattle are familiar with the sensation of paying out money to meet obligations on a power development for many years during which it had been expected to pay its own way.

There is no question but that each community will pay in full for the power it receives, especially with the provision that an additional bill may be rendered at the end of the year to meet any miscalculation—although it may be questioned how long they will care to keep up this kind of contract—but until the power is ready to deliver, there is nothing to collect. It is just this kind of a fiasco which has strewn the continent with the wrecks of municipal and state failures and which has brought about the general American distrust in government ownership.

The Electric Truck as a Western Possibility

ONE field in which the West has not lived up to its electrical possibilities is in the use of electric trucks. These convenient vehicles have found a wide application in the East, displacing horse drawn and gasoline trucks almost entirely for city work in some instances and finding considerable service in long distance hauls where the proper provisions are made for recharging or changing batteries along the route.

Western interests up until now have been somewhat skeptical of its use in this district, owing to the long hauls necessary under local conditions. With a cruising radius of only fifty miles for the batteries and the length of time required either to recharge or change them, the drawbacks seemed to overshadow the advantages. A new development in the latest trucks, however, permits the use of a "stone cradle" with which batteries can be changed in less time than it takes to fill the average car with gasoline. Service stations established along the line of main highways, therefore, would provide a simple solution for the difficulty.

On the positive side, the electric truck has many advantages. Not only is the cost of upkeep much less than with any other type of conveyance, but the insurance companies are prepared to give a very favorable rate owing to the freedom from fire hazard and the other safety elements of the machine. As much as fifty per cent has been saved on this item alone by some of the large eastern concerns. Another attraction is the decrease in the number of accidents reported when electric trucks are used. Whether the simplicity of operation and the perfect control is at the base of this or whether the more cleanly work attracts a higher type of drivers is uncertain, but records of many companies show this to be the case.

There is no question but that there is a great future for the electric truck in western commercial centers—and the possibilities of an attractive field for its use even in long haul work in handling highway freight.

Western Comment on Current Events

Editorial Notes and Readers' Views on the Outstanding Aspects of Financing, Trade Promotion, Legislative and Associated Topics that have a Special Bearing on Western Business

Development Started in Alaskan Oil

Recent announcement that two of the largest oil companies in America, the Standard Oil Company and the General Petroleum Company, had contracted with leasees of Alaskan oil lands has caused a flurry of interest in the Northwest, particularly in Seattle. Projected plans of the two companies call for an initial expenditure of two million dollars for development work, before production begins. The lands to be developed lie in the Gold Bay district, and consist of some eight hundred and sixty claims, the locators of which have signed a working agreement with the Western Development Company, the intermediary through which negotiations were consummated with the operating oil companies.

Seattle looks forward to prosperity greater than that attendant upon the discovery of gold in Alaska, and certainly, if oil in any commercial quantities is found, of more enduring moment. Geographically and economically Seattle is situated to be the principal port of departure for Alaskan exploration. She is equally favorably situated to handle fleets of tankers and as a refinery base. Development of oil on a large scale would usher in a new era in the industrial life of the Pacific Northwest, and indications point to the fact that such will be a reality in the near future.

Utility Has Record Number of Stockholders

With 48,259 individual holders of its common stock, the Southern California Edison Company of Los Angeles probably has more people financially interested in its business than any other electric utility in the world. This enormous ownership by consumers, residents of the territory which it serves and company employes, makes a record in the public utility business which is attracting very general attention, and is having an important bearing on financing. While the Southern California Edison Company was not the originator of the plan of associating consumers and the people of the community served in the business which supplies electrical service, it has taken up the movement which had its inception in California in 1914, and has developed it to a point where the company activities in the development of the water power resources of the state, and in the use of its electricity, has become a project of the people, in which the people are not only financially but earnestly and patriotically interested.

Starting with a plan by which all employes could become participating stockholders in the company, on easy payments, there was built within the amalgamated organization, an inter-company sales force, which has become the great factor in making Edison stock the most universally owned security in the southwest. The plan of financing construction work through the sale of both bonds and stock was a fundamental part of the employes' education, the instructions going to the very root of sound financing. They were earnestly followed with the result that a great inter-company sales organization of employe stockholders was developed from the rank and file of the workers.

Experience has proven that the ownership of stock by employes has increased their efficiency and has resulted in economy in operation and tended to bring the service to a very high point of excellency. Ownership by consumers keeps the ownership and management of the company in Southern California where the problems of electric development and distribution are understood . A community in which an average of about one family out of four derives a portion of its income from the dividends of the company which supplies its electric service, is essentially a thrifty and progressive community in which disturbers and agitators find little sympathy and sound financing is regarded as the basis of future prosperity.

Manufacturers and Importers are Benefited

Nothing more surely emphasizes the industrial growth of the West than the establishment in San Francisco of a branch of the Underwriters' Laboratories, Inc., by the National Board of Fire Underwriters.. These laboratories test all appliances, devices, systems and materials having any bearing whatever upon the hazards of life, fire and collision and the prevention of accidents and theft. It is becoming very difficult to market an electrical appliance or product used in building construction which has not been tested by the Underwriters' Laboratories.

Inasmuch as this is not a money-making organization but is maintained at actual cost for the great purpose of fire prevention, its tests and findings have the hearty cooperation of various civic, fire prevention, state, federal and municipal bodies and insurance organizations, all working to the elimination of fire hazards.

The establishment of a Pacific Coast office in San Francisco has been a great convenience to manufacturers and inventors in the Pacific Coast and western states in the development and manufacture of their various devices.

"No Shingle" Legislation in California

One of the many examples of freak legislation will appear as a referendum measure in California in November, in the State Housing Act. It is claimed that the act would prohibit the use of shingles for roofing in any city, town or incorporated community in California. Lumbermen maintain that the act is unjust and discriminatory, and a campaign under the direction of the Executive Committee California Lumbermen is being being conducted to defeat the measure.

The objectionable part of the act is contained in the following paragraphs:

"Every wooden building hereafter erected in every incorporated town, city or city and county, shall have the exterior walls thereof and roofs thereon constructed of the same kind of materials and in the same manner hereinbefore provided for semi-fireproof buildings."

"The roofs of every semi-fireproof building shall be constructed of approved incombustible materials, or be well covered with an approved composition fire resistive or fire retardent material."

The lumbermen claim that this regulatory measure would favor the manufacturers of patent roofings and make a law-breaker of the home-builder who shingles the roof of his dwelling.

Mining Outlook Improving

The reports of the U. S. Geological Survey for the first half of 1922, covering Utah, Montana, Idaho, Arizona, Nevada and California show that metal mining in all these states is experiencing a decided revival after a year or more of stagnation such as the industry has never before experienced.

The Pittman Act has helped save silver mining during this critical period and generally reduced cost of operation and price of materials is aiding in the resumption of gold mining.

Increased use of copper by our own people is the surest way of helping put this greatest of our western metals on its feet. The outlook for lead and zinc is also most favorable.

Summarizing mining reports, the West can feel thankful that its metal industry is again returning to normal conditions. With a minimum of government and state interference with private industry and a reduction in taxation burdens, mining stands a chance of again employing its tens of thousands of workmen at good wages.

Oregon Company Undertaking Large Project

The Mountain States Power Company has completed arrangement with the California Oregon Power Company for the purchase of a large block of hydroelectric power—12,000 kilowatts—for distribution among its customers in the Willamette Valley, Oregon. Under the terms of the contract the California Oregon Power Company is constructing a 115-mile transmission line to connect its hydroelectric plant at Prospect, Oregon, on the Rogue River, with the Mountain States Power Company's sub-station at Springfield.

The line is being built to operate at 110,000 volts, of size 00 bare copper conductor, on suspension type insulators, with 350-foot spans. It will cross the foothills of the Siskiyou Mountains, and from a point near Roseburg, Oregon, will parallel the Pacific Highway north to Springfield.

While the main connecting line is under construction, Mountain States Power Company is rapidly proceeding with the erection of inter-connecting lines between its various divisions.

A twenty-mile line, for operation at 66,000 volts, is being built to connect the Dallas district with the Albany district. The terminus of this line will be at the town of Independence. An 11,000-volt line will be extended nine miles to connect with the town of Jefferson, until recently served by a municipally operated system.

The completion of these lines will in many ways benefit the Mountain States Power Company and the territory it serves. It will form the connecting link between northwestern Oregon and the great hydroelectric developments in the southern section of the state. The steam power stations of the company have heretofore depended upon sawmill refuse as fuel, and the supply has at times been irregular. The new source of energy supply will permit these plants to close down; they will be maintained as reserve stations for operation in times of emergency. The Willamette valley embraces over 9,000 square miles of the most productive land in the West, and the adequate supply of electric energy, which the construction of this transmission line makes available, will go far to aid the future growth and development of the state.

Amalgamation of Important Sugar Companies

An important amalgamation of beet sugar producers that is of particular interest to California has just been effected by the consolidation of the Holly Sugar Corporation, which owns or controls six plants in California, Colorado and Wyoming, and the Grand Junction Sugar Company, owning a big plant at Grand Junction, Colorado. The merger was consummated by the exchange of Holly Sugar Corporation common stock for all the outstanding securities of the Grand Junction Sugar Company.

By this consummation, the Holly Sugar Corporation has increased its productive capacity to 1,200,000 bags a year. It now owns outright plants at Huntington Beach, California; Swink, Delta and Grand Junction, Colorado, and Sheridan, Wyoming. It also owns 50 per cent of the stock of the Southern California Sugar Company and 69 per cent of the stock of the Santa Ana Sugar Company, both operating plants at Santa Ana, California.

The merger of the Holly Sugar Corporation and the Grand Junction Company is commonly recognized as a step in advance and in keeping with the general trend toward consolidation of business interests. The enlarged company occupies with the Spreckels interests and the American Beet Sugar Company, a leading place among beet sugar producers in the West.

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With 48,259 individual holders of its common stock, the Southern California Edison Company of Los Angeles probably has more people financially interested in its business than any other electric utility in the world. This enormous ownership by consumers, residents of the territory which it serves and company employes, makes a record in the public utility business which is attracting very general attention, and is having an important bearing on financing. While the Southern California Edison Company was not the originator of the plan of associating consumers and the people of the community served in the business which supplies electrical service, it has taken up the movement which had its inception in California in 1914, and has developed it to a point where the company activities in the development of the water power resources of the state, and in the use of its electricity, has become a project of the people, in which the people are not only financially but earnestly and patriotically interested.

Starting with a plan by which all employes could become participating stockholders in the company, on easy payments, there was built within the amalgamated organization, an inter-company sales force, which has become the great factor in making Edison stock the most universally owned security in the southwest. The plan of financing construction work through the sale of both bonds and stock was a fundamental part of the employes' education, the instructions going to the very root of sound financing. They were earnestly followed with the result that a great inter-company sales organization of employe stockholders was developed from the rank and file of the workers.

Experience has proven that the ownership of stock by employes has increased their efficiency and has resulted in economy in operation and tended to bring the service to a very high point of excellency. Ownership by consumers keeps the ownership and management of the company in Southern California where the problems of electric development and distribution are understood . A community in which an average of about one family out of four derives a portion of its income from the dividends of the company which supplies its electric service, is essentially a thrifty and progressive community in which disturbers and agitators find little sympathy and sound financing is regarded as the basis of future prosperity.

Manufacturers and Importers are Benefited

Nothing more surely emphasizes the industrial growth of the West than the establishment in San Francisco of a branch of the Underwriters' Laboratories, Inc., by the National Board of Fire Underwriters.. These laboratories test all appliances, devices, systems and materials having any bearing whatever upon the hazards of life, fire and collision and the prevention of accidents and theft. It is becoming very difficult to market an electrical appliance or product used in building construction which has not been tested by the Underwriters' Laboratories.

Inasmuch as this is not a money-making organization but is maintained at actual cost for the great purpose of fire prevention, its tests and findings have the hearty cooperation of various civic, fire prevention, state, federal and municipal bodies and insurance organizations, all working to the elimination of fire hazards.

The establishment of a Pacific Coast office in San Francisco has been a great convenience to manufacturers and inventors in the Pacific Coast and western states in the development and manufacture of their various devices.

One of the many examples of freak legislation will appear as a referendum measure in California in November, in the State Housing Act. It is claimed that the act would prohibit the use of shingles for roofing in any city, town or incorporated community in California. Lumbermen maintain that the act is unjust and discriminatory, and a campaign under the direction of the Executive Committee California Lumbermen is being being conducted to defeat the measure.

"No Shingle" Legislation in California

The objectionable part of the act is contained in the following paragraphs:

"Every wooden building hereafter erected in every incorporated town, city or city and county, shall have the exterior walls thereof and roofs thereon constructed of the same kind of materials and in the same manner hereinbefore provided for semi-fireproof buildings."

"The roofs of every semi-fireproof building shall be constructed of approved incombustible materials, or be well covered with an approved composition fire resistive or fire retardent material."

The lumbermen claim that this regulatory measure would favor the manufacturers of patent roofings and make a law-breaker of the home-builder who shingles the roof of his dwelling.

The reports of the U. S. Geological Survey for the first half of 1922, covering Utah, Montana, Idaho, Arizona, Nevada and California show that metal mining in all these states is experiencing a decided revival after a year or more of stagnation such as the industry has never before experienced.

Mining Outlook Improving

The Pittman Act has helped save silver mining during this critical period and generally reduced cost of operation and price of materials is aiding in the resumption of gold mining.

Increased use of copper by our own people is the surest way of helping put this greatest of our western metals on its feet. The outlook for lead and zinc is also most favorable.

Summarizing mining reports, the West can feel thankful that its metal industry is again returning to normal conditions. With a minimum of government and state interference with private industry and a reduction in taxation burdens, mining stands a chance of again employing its tens of thousands of workmen at good wages.

The Mountain States Power Company has completed arrangement with the California Oregon Power Company for the purchase of a large block of hydroelectric power—12,000 kilowatts—for distribution among its customers in the Willamette Valley, Oregon. Under the terms of the contract the California Oregon Power Company is constructing a 115-mile transmission line to connect its hydroelectric plant at Prospect, Oregon, on the Rogue River, with the Mountain States Power Company's sub-station at Springfield.

Oregon Company Undertaking Large Project

The line is being built to operate at 110,000 volts, of size 00 bare copper conductor, on suspension type insulators, with 350-foot spans. It will cross the foothills of the Siskiyou Mountains, and from a point near Roseburg, Oregon, will parallel the Pacific Highway north to Springfield.

While the main connecting line is under construction, Mountain States Power Company is rapidly proceeding with the erection of inter-connecting lines between its various divisions.

A twenty-mile line, for operation at 66,000 volts, is being built to connect the Dallas district with the Albany district. The terminus of this line will be at the town of Independence. An 11,000-volt line will be extended nine miles to connect with the town of Jefferson, until recently served by a municipally operated system.

The completion of these lines will in many ways benefit the Mountain States Power Company and the territory it serves. It will form the connecting link between northwestern Oregon and the great hydroelectric developments in the southern section of the state. The steam power stations of the company have heretofore depended upon sawmill refuse as fuel, and the supply has at times been irregular. The new source of energy supply will permit these plants to close down; they will be maintained as reserve stations for operation in times of emergency. The Willamette valley embraces over 9,000 square miles of the most productive land in the West, and the adequate supply of electric energy, which the construction of this transmission line makes available, will go far to aid the future growth and development of the state.

An important amalgamation of beet sugar producers that is of particular interest to California has just been effected by the consolidation of the Holly Sugar Corporation, which owns or controls six plants in California, Colorado and Wyoming, and the Grand Junction Sugar Company, owning a big plant at Grand Junction, Colorado. The merger was consummated by the exchange of Holly Sugar Corporation common stock for all the outstanding securities of the Grand Junction Sugar Company.

Amalgamation of Important Sugar Companies

By this consummation, the Holly Sugar Corporation has increased its productive capacity to 1,200,000 bags a year. It now owns outright plants at Huntington Beach, California; Swink, Delta and Grand Junction, Colorado, and Sheridan, Wyoming. It also owns 50 per cent of the stock of the Southern California Sugar Company and 69 per cent of the stock of the Santa Ana Sugar Company, both operating plants at Santa Ana, California.

The merger of the Holly Sugar Corporation and the Grand Junction Company is commonly recognized as a step in advance and in keeping with the general trend toward consolidation of business interests. The enlarged company occupies with the Spreckels interests and the American Beet Sugar Company, a leading place among beet sugar producers in the West.

Letters to the Editor

Cooperation Between All Branches of Industry Needed to Improve Conditions of Contractor

To the Editor.

Sir: In your "Straws Show," page 1, issue July 1, you give food for thought.

People buy where they can buy cheapest. The same man who demands union wages goes out nights, Sundays and holidays and works for friends, neighbors, and acquaintances at what to him is good pay, but the contractors cannot meet his terms because of overhead, and the fact that they have to pay this cutthroat union wages. And these same contractors, because this man works for them, allow him to buy "stuff for his own use" at wholesale or cost price to them, aiding in cutting their own financial throats. I know that union men are not supposed to do these things, etc.—the point is, they must not do these things. If this type does this sort of thing can you blame any other chap who knows enough to install stuff and get by a building inspector if he tries to pick up a little easy money?

The idea is that as long as anyone can buy electrical fixtures and put them in, the man who does it cheapest will get—all over the country, in the aggregate—enough business to injure legitimate, right thinking and right planning contractors who really have the good of their customers at heart and want to give them real service at a fair price under conditions as they exist. To curb "shyster" practices, manufacturers must cooperate with jobbers, jobbers with retailers, and, all together, must get after the unions, making them enforce their own rules as to outside work; get after municipal law makers and have them pass more stringent laws as to what may pass inspection; get after underwriters to make insurance risks tighter, etc. It will take it all to make an impression.

W. E. READER.

San Diego, Cal.

Basic Iron Industry Made Possible by Electric Furnace Need of Western Industry

To the Editor.

Sir: Mr. Larry J. Barton's discussion in your issue of June 1st is somewhat puzzling. He does not clearly emphasize in the same, the fact that the electric furnace is used for two, not necessarily interdependent distinct purposes in the iron industry. These are:

A. The electric furnace is used as a shaft-furnace to produce from iron ore, lime, charcoal and electric energy, a semi-finished product, pig iron.

B. The electric furnace is used as an electric steel furnace for the purpose of refining pig iron, or scraps of various kinds, producing a finished product, steel.

An iron industry in California should be based on combining the two uses of the electric furnaces, both of them quite different in type, and produce a finished article, a high grade commercial product like tool steels, steel castings, light rolled materials, etc.

It is very doubtful if electric pig iron under any circumstances can compete with blast furnace pig, and especially with the cheap Chinese article brought into the western market.

The figures which Mr. Barton quotes as to cost of producing electric pig iron, are the Swedish costs adapted to American conditions. Anyone familiar with Swedish and American conditions will quickly realize that the assumed costs are not those existing in Sweden, but those which would occur under suitably arranged conditions in U. S. A.

The finished articles from an iron and steel industry such as outlined by me (that is, starting with the ore and carrying through the stage of semi-finished pig iron to the finished steel product); demand a high price and there always is a large market for these; therefore an undertaking under given California conditions would be a success financially, and would be a basic industry developing the natural resources of the state.

Producing steel in the electric furnaces from scrap metal is a perfectly legitimate industry but is essentially a "junk business"—creates nothing new, but is like the snake swallowing its own tail.

A basic iron industry is what California needs, built up on conditions as they exist here.

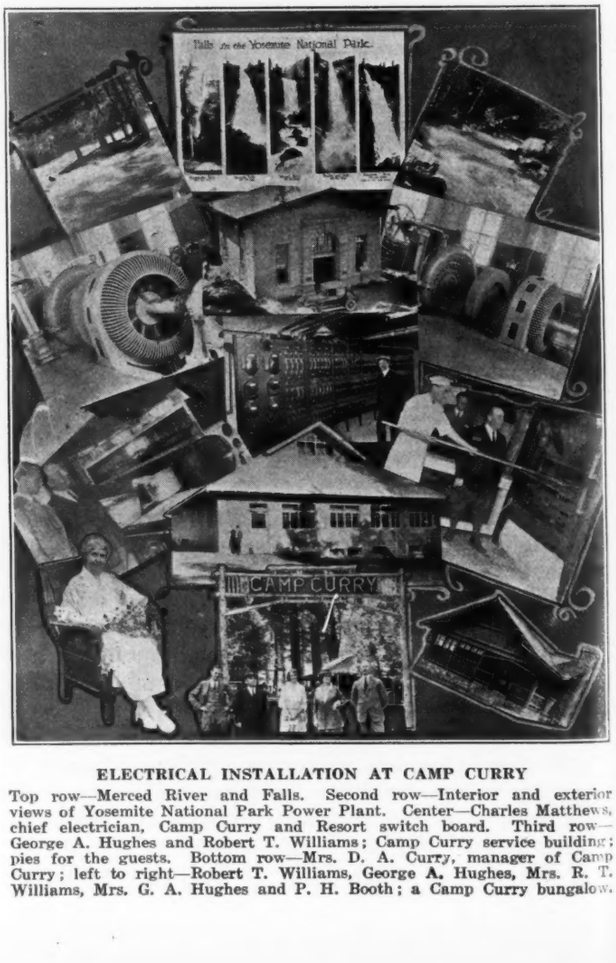
J. W. BECKMAN,
Beckman & Linden Engineering Corporation.

San Francisco.

Model Installation of Electric Cooking and Heating Appliances in Yosemite Valley

To the Editor:

Sir: You will be interested in knowing that there is a connected load of close to 1,000 hp. of electric cooking, air heating and water heating apparatus in actual service in the restricted area of the Yosemite Valley. At the present time, on cooking operations alone, there is over 400 hp. used regu-



ELECTRICAL INSTALLATION AT CAMP CURRY

Top row—Merced River and Falls. Second row—Interior and exterior views of Yosemite National Park Power Plant. Center—Charles Matthews, chief electrician, Camp Curry and Resort switch board. Third row—George A. Hughes and Robert T. Williams; Camp Curry service building; pies for the guests. Bottom row—Mrs. D. A. Curry, manager of Camp Curry; left to right—Robert T. Williams, George A. Hughes, Mrs. R. T. Williams, Mrs. G. A. Hughes and P. H. Booth; a Camp Curry bungalow.

larly. The importance of this electric cooking apparatus is brought to our attention when we consider that, if the current was shut down at the Yosemite plant, practically everybody in the place would have to move out until such time as they were able to build up a supply of cooked foods to go into the Valley. When you consider that there are from eleven to twelve thousand people in the Valley at the present time dependent almost entirely upon electrically cooked food for their existence, it is apparent the part that electricity plays in the wonders of the Yosemite.

It is a tribute to the aggressiveness and the managerial capacity of the Camp Curry Company, and the Yosemite National Park Company, as well as the United States Government Department of National Park Service to see the way in which the convenience, comfort, conservation, coolness, cleanliness, and cheapness of electricity for cooking has been utilized.

P. H. BOOTH,

District Sales Manager, Edison Electric Appliance Co.
Yosemite, Cal.

A Regular Exchange of Engineering Students Between California and Sweden

To the Editor.

Sir: As a Swedish exchange student of the American-Scandinavian Foundation, I have during the past twelve months been studying high voltage transmission problems in California. Thanks to the admirable courtesy of the power companies I have had an opportunity to visit a number of the wonderful hydroelectric developments and transmission systems on the Pacific Coast. Many of these were at the time of their completion unique in some respects, placing California as a leading country in this line of technical science and its applications.

In Europe, Sweden no doubt deserves one of the foremost places as a pioneer in electric transmission. To justify this statement, I need only mention the successful development and application of the principle of graded insulation, which has made it possible to eliminate all lightning arresters in systems with voltages as low as 60,000. This principle involves a grading of the insulation in such a way as to concentrate all faults upon easily accessible and replaceable apparatus, leaving expensive and inaccessible parts of the system unharmed. The problem of line insulation has been so successfully solved that during eight years of operation, the failures of suspension insulators have averaged only .005 per cent per year.

During my studies here I have become impressed with the similarity of the problems facing the two countries, especially in regard to the long distances over which the energy has to be transmitted, and also in regard to the importance of hydroelectric developments on account of the scarcity of other energy resources.

The above has convinced me that Sweden and California could derive great benefit from a regular exchange of students of hydroelectric engineering. The exchange idea is by no means a new one, as for instance, the American-Scandinavian Foundation has for several years conducted such an exchange in various fields of arts and science. In this case, however, it seems to me that the idea could be much improved by a cooperation of the universities and power companies in California and Sweden, along the principles outlined below.

One engineer from each country should be sent every year to spend approximately two years in the other country. The first year should be devoted to studies and research work at a university, and a scholarship should be endowed, sufficient to cover the student's traveling and living expenses during that year. For the second year, the power companies should agree to give the students practical work in their organizations, giving them an opportunity to study the most recent developments, and to obtain an inside view of the operating conditions in their systems, which latter is extremely difficult to obtain in any other way. The student should this year receive a salary, sufficient to enable him to support himself.

Except in special cases, the work of the students probably would not be of much direct value to their hosts. The stimulating influence of the exchange, however, and the new ideas brought home by the returning students, certainly would by far outweigh the inconvenience caused by the students to their hosts.

In my mind there is no doubt that the American-Scandinavian Foundation would most heartily indorse such an exchange and with pleasure place their organization and experience at the disposal of the parties interested in the exchange, and the exchange would thus greatly add to the friendly relations between the United States and Sweden, which are being established in ever increasing numbers.

San Francisco. IVAR HERLITZ.

How Twenty-four Years Ago Compared with Today in Hydroelectric Projects

To the Editor:

Sir: In these modern days of efficiency and gigantic construction programs, when a mere matter of launching a hydroelectric power project is completed during the course of a luncheon, and a steam plant or two started while enjoying the after-dinner cigar, it is interesting to let one's mind go back to the earlier periods of hydroelectric development—say, about twenty-four years ago. The following paragraphs, reprinted from the Scientic American of March 27, 1897, bring to mind a vivid comparison between the viewpoint of twenty-four years ago and that of today:

"One of the latest and, in many respects, one of the most remarkable long distance transmission plants is that which has been built by the San Joaquin Electric Company to supply the town of Fresno with light and power. Nature has made abundant provision for furnishing electric power along the valleys of the Pacific Coast, the many streams which flow down the Sierra and the Cascade Mountains providing an abundant and never-failing supply of water for this purpose."

The article goes on to tell how this "wonder plant" transmitted electric power to the town of Fresno, a distance of 43 miles, at 11,000 volts, which in those days was a feat of considerable magnitude. When placed in operation in 1896, after having been in process of construction for a period of 14 months, this "wonderful long distance transmission plant" had an installed generating capacity of only 1,400 horsepower, which was later increased to 1,800 horsepower.

It is further pointed out in the article that the "little wonder of the San Joaquin river" supplied current for 165 arc lights, over 5,000 incandescent lamps, and 460 horsepower in motors.

This was twenty-four years ago.

On the site of this plant, which was dismantled in 1910, now stands a modern hydroelectric power plant, owned and operated by the San Joaquin Light & Power Corporation, a producing unit in its system of 14 power houses. It is known as the San Joaquin No. 1, and has an installed generating capacity of 21,400 horsepower. The modern plant was constructed in two parts, construction of the first part began in November, 1909, and was completed in September, 1910, a period of 10 months. The first part when completed had an installed generating capacity of 10,700 horsepower.

CARL BERNSTON,

Fresno, Cal. San Joaquin Light & Power Corp.

Builders of the West

PERIODS of unusual responsibility sometimes reveal to men ability in themselves which afterwards determines their every activity. Warren H. McBryde was assistant superintendent of the Hercules Powder Company at Hercules, California, when the world became convulsed in the recent war. During that time he had charge of from four hundred to four thousand men. When the period of demobilization came, with the help of the company's employment manager, he secured positions for three thousand men. From that moment his keen interest in the relation of employer and employe and his efforts to gain a better understanding between them have never wavered.

WARREN H. McBRYDE

Secretary of the California and Hawaiian Sugar Refining Corporation and President of the Industrial Association of San Francisco, who is one of the outstanding figures for better industrial relations in the West.

Yet in 1893 when he entered the Alabama Polytechnic Institute, he had no particular thought of the importance of this relation of men to men in industry. He was filled with his ambitions in mechanical and electrical engineering. Graduating in the class of 1897, his work in architectural designing, drafting and construction took him to various parts of the South. Finally as chief electrician on the United States Army transport "Sheridan" during the Spanish-American war, he sailed to the Philippines via the Suez Canal and thence to San Francisco.

In California his rise in his profession was steadily progressive. With characteristic directness he applied to the Yuba Electric Power Company for the job of day laborer. Within a year he was assistant resident engineer.

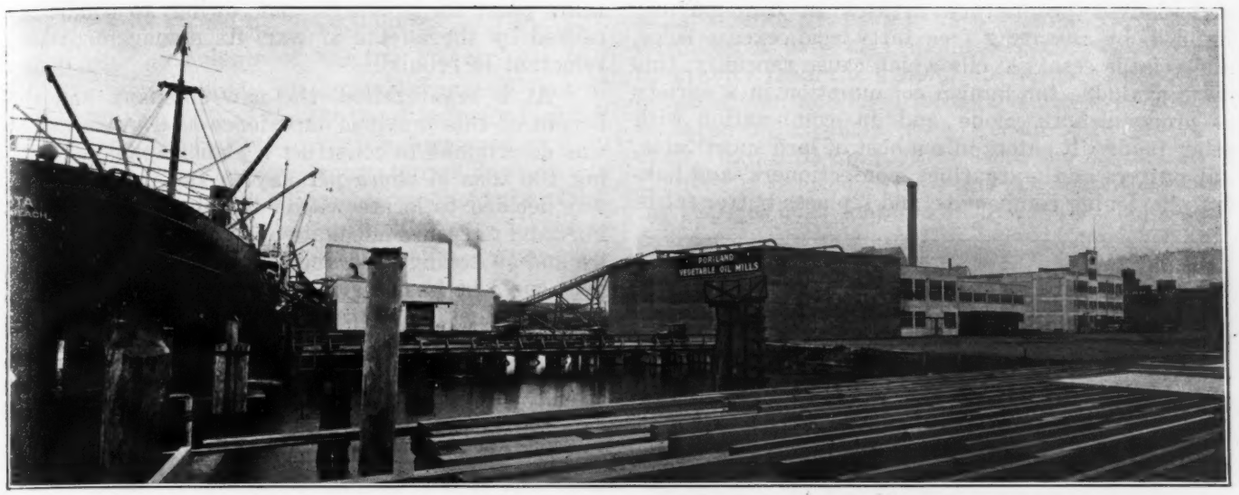
Later he was in the employ of the Bay Counties Power Company and at a still later date with the California Gas & Electric Company. He is active in the San Francisco Engineers' Club, the San Francisco Electrical Development League and the affairs of the American Society of Mechanical Engineers.

At Hercules where he rose from first resident engineer for the Dupont Powder Company to assistant superintendent of the Hercules Powder Company in the space of a few years, his thorough knowledge of his profession was brought into full use. During the war period he had also charge of the Labor and Industrial departments of the Hercules Works. His interest in the improvement of community life also found its expression in his positions of mayor of Hercules and supervisor of Contra Costa county.

This same vital community interest enjoyed a larger field when in 1919 he moved to San Francisco as secretary of the California and Hawaiian Sugar Refining Corporation and assistant to the general manager, handling engineering problems. He had not been long in San Francisco when he found himself one of the directors of the Associated Charities and on the advisory board of the Salvation Army. In his positions in these two organizations he has an excellent opportunity to study the different types of industrial problems which present themselves. Because of Mr. McBryde's experience as an employer and his keen interest in working men he was last year elected president of the Industrial Association of San Francisco. In that capacity he has an opportunity to put into practical effect some of his ideas of making that city a sound industrial center. Never was a clearer understanding between employer and employe and between the different factions of labor more necessary than now. Mr. McBryde knows that one side is rarely altogether to blame.

In short, he supports the American plan which is that any person who wants to work, is qualified to work, and can find work, has the right to do so, and that no one should be barred from working on account of his affiliation or non-affiliation with any organization. His object as president of the Industrial Association is not to support capital against labor nor vice versa. It is to bring about a better understanding between the two, to give more activity to the great area of population in San Francisco, to make San Francisco not only an excellent place to live in, but also an excellent place in which to work.

To Warren H. McBryde, then, because of his outstanding work as electrical engineer and because of his untiring and unselfish zeal for public good which is bringing about better economic conditions throughout the West, this issue of the Journal of Electricity and Western Industry is affectionately dedicated.



Plant of the Portland Vegetable Oil Mills at Portland, showing ship at wharf discharging copra. Copra is shipped in bulk and unloaded by two six and eight-inch suction lines running into the hold of the ship. The cargo is unloaded at the rate of 40 tons per hour.

The $5,000,000 Cocoanut Oil Industry in the Northwest

The Strategic Position of Portland in Oriental Shipping, Power Facilities, Labor and Market Has Made Possible the Building Up of an Important Industry for the Manufacture of Copra Products in Portland Vegetable Oil Mills

By FRANK WHALLEY WATSON
Vice-President, Portland Vegetable Oil Mills Co.

IN an attempt to carry out in a practical way, the principle voiced by the slogan "Keep the Port in Portland," an effort was put forth in 1920 to organize a corporation, having its headquarters in Portland, Oregon, for the purpose of manufacturing cocoanut oil, oil cake, and resultant products from raw copra imported from the Orient. This effort resulted in the present organization known as the Portland Vegetable Oil Mills Company, located in Portland, Oregon. In the accomplishment of this purpose the existing disparity between a large volume of exports and a nominal total of imports at the Port of Portland has been substantially reduced; a substantial, modern, and efficient manufacturing plant capable of, and successfully engaged in producing products to the value of $5,000,000 annually, has been added to the roll of western industries; and an additional proof made that western talent, capital, and executive ability are capable of organizing, financing and operating successfully, their own manufacturing enterprises.

Copra and Its Products

The crude copra of commerce is the dried and broken meats of the cocoanut. It is a staple contribution of the Oriental tropics to the world's commerce, especially Europe and the United States. The principal contributors of this commodity to the Pacific Coast ports are, in the order of relative importance, the Philippines, Java, Ceylon and the many groups of islands comprising Polynesia. Until quite recently, the product was derived from natural groves but of late years an increasingly large supply is furnished from regularly set out and cultivated plantations.

Fair merchantable copra contains about 70% of its weight in vegetable fat, the cocoanut oil of commerce, together with about 30% fibre and moisture combined. The oil is usually separated by pressing, after grinding and heating the copra to a temperature at which the oil will readily flow. This method is termed "expression" and the product is termed "expressed oil." The method of separation known as extraction in which the oil is dissolved by use of solvents, such as benzol and other hydrocarbons, which are later recovered by complete distillation, is little used in this country. Expressed oil is in reality, a fat, being a solid of lard consistency at temperatures below 70 degrees Fahrenheit. Above its melting point, it is a true liquid of low viscosity.

The fiber, or pulp, remaining after expressing the oil, is used as a food in all branches of animal husbandry, its analysis approximating that of whole corn as a stock and poultry ration.

Its use in mixed feeds and fattening rations is fast becoming universal as it does not have the deleterious qualities of either cotton or linseed meal. About 5% fat remains in the cake in usual oil mill practice. This product is marketed either crude as it comes from the presses in cakes or sacked, with analysis attached, after being ground to about the fineness of corn meal, which products are known as copra-cake and copra meal respectively.

Expressed cocoanut oil has a double value in commerce in that it may be utilized either in soap manufacture or refined for edible purposes. Possessing the highest value for its saponification factor of any known fat or oil, it is a constituent of almost all the higher grades of toilet, bath and laundry soaps,

and kindred proprietary articles in common use. Refined, by removing free fatty acid, excess color, and volatile essential oils which cause rancidity, this oil is available for human consumption in a variety of products both alone and in combination with other foods. It enters into a host of lard substitutes, nut butters and margarines, confectioners' and bakers' shortening compounds, and replaces butter fat in

Copra in bulk. The crude copra of commerce is the dried and broken meats of the cocoanut. It is one of the Oriental tropics main contributions to the world's commerce. The Philippine islands is the most important producer of this commodity.

several brands of condensed milk. Europe has depended upon it for many years owing to the decrease in animal fats due to diminishing herds, and in this country each year records its increasing use as edible for similar reasons.

During the late war cocoanut oil was in heavy demand for its glycerine content which is released as a by-product in soap making. Great quantities of glycerine were required in the manufacture of high explosives.

Scope of the Cocoanut Oil Industry in the United States

An idea of the importance of the cocoanut oil industry, its growth and present volume may be formed from the following data taken from Government reports:

	1917	1919
Copra Imports, tons	183,000	168,000
Cocoanut Oil Imports, tons	81,000	140,000
U. S. Production, tons	94,000	108,000
U. S. Exports, tons	915	4,000
U. S. Consumption, tons	150,000	211,000

The above are figures representing the period during which the production of glycerine from cocoanut oil was very great for use in the manufacture of explosives in the prosecution of the World War. It may, however, be conservatively estimated that the domestic consumption in 1921 was 185,000 tons valued at $30,000,000 in the crude state.

Economic Factors Governing Plant Location

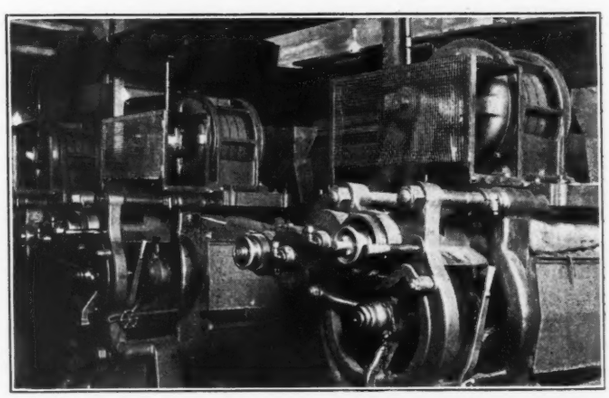
The present plant is not a pioneer in its locality. It was preceded ten years by the Kaola Company which was absorbed by The Palmolive Company of Milwaukee, Wis., the latter operating a mill of a daily capacity of 35 tons copra until it was destroyed by fire in December, 1919. This plant had demonstrated the advantages of location, both as regards inbound shipments of raw material and as a distributing point for products, but owing to conditions caused by the effects of war, its management was reluctant to rebuild.

At is organization, the new company had the benefit of this previous experience as a guide and it was determined to construct a plant capable of milling 100 tons of copra per day as the first unit. It was decided to locate within the terminal limits of Portland to secure adequate and reasonable car service and switching; and upon deep water so that cargoes could be landed at its docks with the minimum of expense. The territory adjacent to Portland is famed for its stock raising and dairy industries, so that a large and growing market for oil cake was already provided. In addition there was an abundance of electric power available, labor was plentiful, and the large export tonnage of the port made certain that return cargoes from the Orient would be eagerly sought by ship operators.

It is often asked whether cocoanut oil can be produced as cheaply on the Pacific Coast of America as in the Orient. This is debatable, but any handicay is more than made up by the ability of the crushers here to dispose of the oil cake at attractive prices whereas in the Orient there is scarcely any local demand.

Property and Improvements

The property acquired as a site for the plant of the Portland Vegetable Oil Mills Company was occupied during the war by the Foundation Company as a wooden ship yard. Bulkheads were driven early in 1921 and the entire area of approximately five acres was filled by dredging from the adjacent channel to a height well above high water level. A transfer dock and shed were built to accommodate automatic cargo handling machinery and June 21, 1921, construction of buildings commenced. These consist of



After leaving the bulk storage bins the copra passes through these machines, known as expellers, where about 60 per cent of the oil in the copra is removed. Each machine has individual motor drive, the power of the 35-hp. motor being applied to the machine by means of a silent chain.

copra bins, mill, cake storage and refinery, the first three being combined in one structure while the last is a unit by itself.

Trackage connecting with terminals of all rail lines is provided along the front of all buildings and extends to the dock face. There is ample room for

expansion as buildings at present occupy less than half the area owned by the company.

Convenience of Electric Power

The plant stands within one thousand feet of Steam Station "E" of the Portland Railway Light & Power Co., from which current is furnished at 2300 volts to the transformers, being stepped down to 440 volts, at which it is distributed throughout the plant. From the same source, a 4-in. steam main furnishes an adequate steam supply at 185 pounds gage pressure.

City water supplies the sanitary and fire protection systems, while a remote control operated pumping unit at the dock furnishes river water for circulation in condensers and cooling tanks.

As the entire plant is operated continuously, provision for adequate illumination using 110-volt, single phase current has been made. At points where color visibility is essential, daylight lamps are provided.

Machinery and Equipment

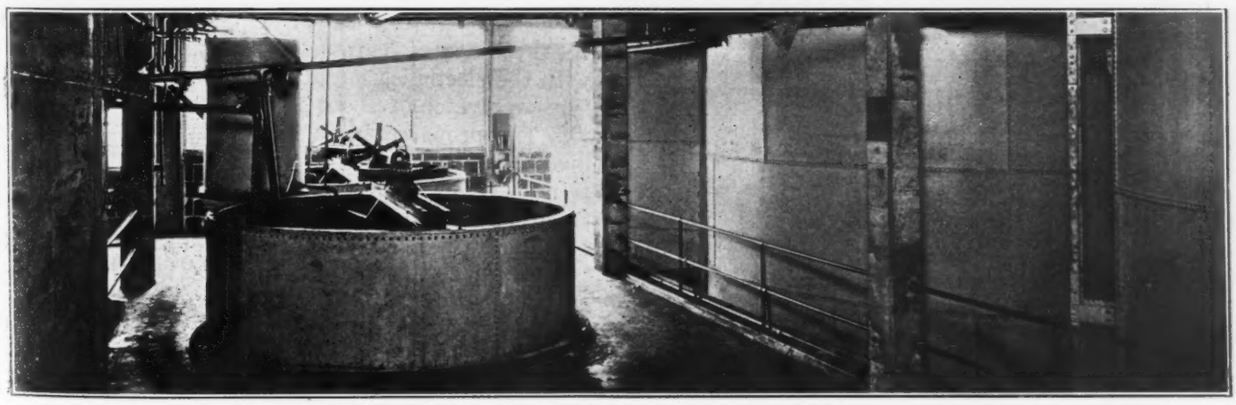
Prompt discharge of copra cargoes from vessels lying at the dock is accomplished by means of a combined vacuum and air pressure unit with capacity of 40 tons copra per hour. Copra in the vessel's hold is conducted through two flexible metal hoses into the upper portion of a collector, whence it falls to the cone point and is fed by an air sealed gate to the boot of a bucket elevator. The elevator discharge leads alternately to two 3-ton scale hoppers which, after weighing, discharge the copra to a collecting hopper directly over the blower discharge pipe, into which it is fed by a second air sealed gate. The air in the pipe blows the copra into the copra bins, raising it fifty feet and transporting it a distance of about 300 feet. The mechanical efficiency of this unit is 30%. It requires one operator, one weigher, three pipe men in the hold to unload, weigh and store at the rate of 40 tons per hour, and the energy of 4½ hp. per ton.

In the mill a similar unit but with a capacity of 10 tons per hour and belt-driven from a 35-hp. motor, withdraws the mill feed from the copra bins and elevates it to a 20-ton service bin at the mill roof. A belt conveyor, equipped with a magnetic head pulley, discharges copra from here to an automatic scale, whence it passes to a grinder for primary crushing. A two-stage steam-jacketed cooker is fed by gravity from the grinder discharge. This cooker is belt-driven and its discharge is conveyed and fed to seven oil expellers, each driven through silent chain from a 35-hp. motor. Here the oil content of the feed is reduced to such a degree that the resulting expeller cake contains about 25½ oil, sufficiently dry for fine grinding. This cake is conveyed to a boot and elevated to the mill roof, while the oil flows, in a launder, from the expellers to a 1,000-gallon collecting tank in the pit. At this point the first stage of the milling operation is complete.

In the second stage, the reject expeller cake discharged at the elevator head is first disintegrated in a cylindrical picker, passed over a second magnetic pulley, and fed to an attrition mill driven directly by two 40-hp. motors running in opposite directions. Grinding is finished by passing the discharge through a stack of five mill rolls driven by silent chain from a 75-hp. slip ring motor. The discharge from the rolls is conveyed to the top section of a vertical 3-stage cooker, belt-driven. When the ground copra has reached the outlet of the bottom section of this cooker it is charged into hydraulic press cages and undergoes final pressing.

Copra meal is discharged from the three-stage cooker into a cake former, hydraulically operated, whence it is placed in layers of equal volume in an empty cage locked in the loading press. A drain plate is introduced between each layer as it is deposited in the cage. When the cage has been charged completely, it is transferred on a carriage to one of the four finishing presses and pressure applied first at 750 lb. per square inch, then at 4,000 lb. per square inch until oil ceases to flow when the pressure is released, withdrawing the press plunger, and the spent cake discharged after transferring the cage to the discharging press. Spent cake passes through a chute onto the floor of the cake storage building. The oil from the hydraulic presses flows in a launder to the same collecting tank as that receiving the expeller oil.

The crude pressed oil is then pumped through plate and frame filter presses, clothed with cotton



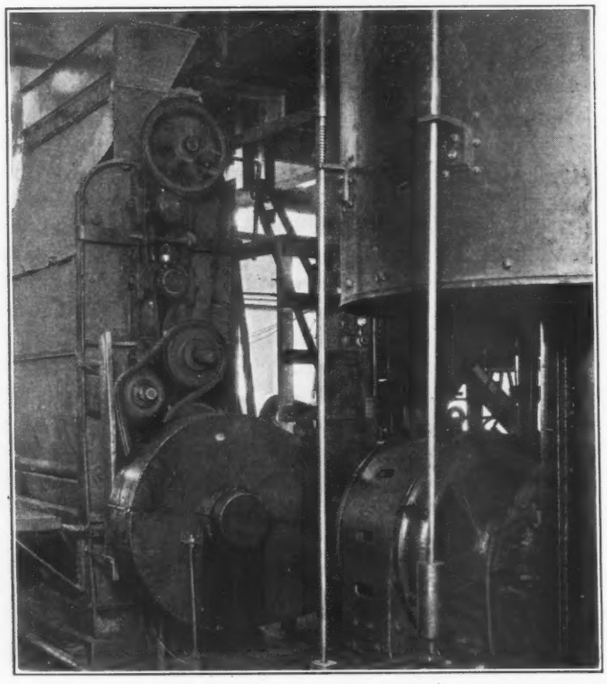
Three of the immense storage tanks (right) and top of the two 50-ton dehydrating cones (left center).

duck. The filtered oil is pumped to storage in the refinery building, passing en route through a liquid meter thermostatically controlled. Both pumps are belt-driven from the same 7½-hp. motor. Filter cake is periodically removed from the filter presses and charged into the meal from the expellers to be repressed.

When sacked meal is required, the hydraulic cake is passed directly into a four-roll cake breaker whence it is elevated to the top of cake storage building. The elevator discharges into a grinder which in turn passes the ground cake into service bin. Two bran packers draw from the service bin and deliver the meal in 100-lb. sacks to either floor for storage or shipment. One 25-hp. motor belted to counter shaft operates breaker and elevator and one 15-hp. motor drives the grinder, conveyors, and packers.

Shop equipment, lathe, drill press, and tool grinder are belt-driven from a 10-hp. motor.

Production control data are compiled for each 8-hour shift from the readings of the automatic mill scale and the liquid meter. These figures are checked



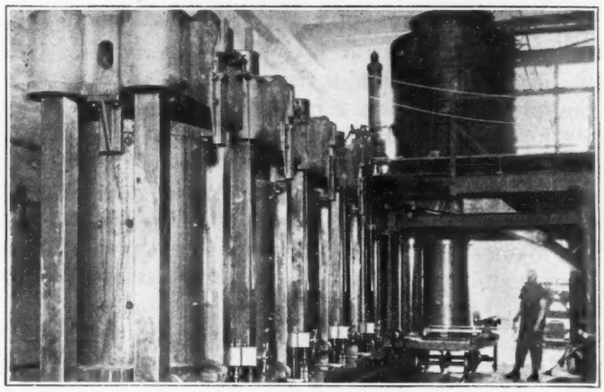
The grinding process is finished by passing through a stack of five 60-inch by 18-inch mill rolls driven by silent chain from a 75-hp. slip ring induction motor. One of the hydraulic accumulators is partially shown on the right.

periodically against shipping weights of oil and results agree closely.

Refining Processes

The tankage section of the refinery building provides a storage capacity of nearly 500,000 gallons. Two 50-ton capacity neutralizing cones, two 10-ton vacuum dehydrating drums, one 10-ton steel vacuum deodorizing drum, and one 10-ton cooling drum comprise the process tanks. There are several smaller service and collecting tanks. All oil tanks are heated by interior steam coils. Loading facilities allow of filling at the rate of one tank car per hour.

Cocoanut oil is processed to meet standard specifications which prescribe the maxima of fatty acid, moisture, impurities and color components. Mill and refining processes are therefore carried out under rigid laboratory control and shipping documents are invariably accompanied by certified analysis. A well-



Final pressing is accomplished in six vertical hydraulic presses where the copra with oil partially removed is subjected to a pressure of 4,000 pounds per square inch. One of the cookers is shown in upper background.

equipped control laboratory with certified oil chemist in charge, is housed in a small building adjacent to the refinery.

Success in the First Year

Aside from a small clerical force in the office, the plant is operated to its full capacity by a maximum force of 40 men. Its annual pay-roll is about $50,000. During the six months of its operation it has crushed 9,700 tons copra and produced 6,300 tons of oil and 3,400 tons cake. The entire output is sold for two months in advance and a satisfactory dividend has been earned and declared from the profits of its first six months' operation. The management anticipates an even better record both in production and profits for the remainder of the year, which should be reflected by sales to the value of $2,500,000 for the initial 12 months period of operation.

RAILWAY ELECTRIFICATION IN CHILE

The Nitrate Railways Co. (Ltd.), a British corporation operating the principal railway system of the Province of Tarapaca, is planning to go ahead with the electrification of the Iquique-La Carpas section—a stretch of about 17 miles with heavy grades.

The proposed work was covered by a contract made between the Nitrate Railway Co. and the Chilean Government in July, 1921. Although this contract has been declared void by the Chilean Congress, representatives of the state railway state publicly that so far as the company is concerned the contract is in full force and effect.

The preliminary estimate of the cost of the work is £2,000,000, and an engineer has arrived from England to work up the necessary technical data for the preparation of detailed plans.

Some of the Major Reasons Why Employes Quit Their Jobs

The Irritating Losses Through an Excessive Labor Turnover Can Be Prevented If the Employer Understands the Reasons Which are Back of the Trouble and the Influences Which Make for Discouragement or Ambition

By GEO. H. DE KAY, JR.
Director of Employment Service, Y. M. C. A., San Francisco

TWO general classifications will cover reasons why men leave their positions. These will be found to be either voluntary or involuntary and, inasmuch as the second classification covers discharges, lay-offs and other reasons arising from acts of the management it can be passed for consideration of reasons arising within the minds of the employes. These reasons will be found to be as varied as mankind itself but may still be quite definitely classified.

Wages and Working Conditions

Quite naturally the wage question is uppermost. From the dawn of commercial history man has given his services in exchange for some commodity desired or needed by himself, but whether he exchanged his strength for a string of beads or a weekly pay check, he has always been concerned over the amount coming to him. Men willingly risk life itself if the gain involved is sufficiently attractive but, unless this gain be proportionate to the risk involved, it will not be an inducement. The hardship endured by the Yukon gold miners is a good illustration of man's readiness to accept risks for large financial returns. However, this question of compensation may be somewhat offset by other attractions under the classification of "conditions of work."

These enter almost as largely into consideration as wages and very frequently take first rank. Many times men will willingly work at a lower wage where they are contented with surroundings or greatly interested in their occupation, rather than at a higher price but in an unsettled or uncomfortable environment. These conditions will vary with the temperament of the individual. Anything tending to create fear, whether of loss of life or limb or simply fear of a foreman or fellow worker will cause a man to give up his job. In the shipbuilding plants during the war any bad accident would result in some of the more cautious-minded throwing up their jobs rather than take similar chances. The same holds true in any industrial organization and more so where safety appliances are not too generally used.

Allowing for Dispositions

The stolid laboring type with limited mentality and imagination is not bothered by plans for advancement; his daily bread and a place to sleep and keep his family mark his ambitions. For this man the ladder of success stops at the first rung and his life is shadowed by the fear of discharge rather than ideas of quitting. Given regular routine employment well directed, and he remains a steady worker; but if this routine be upset or too much of a tax be placed on his mind, he ceases to function and feels it necessary to change for the familiar routine.

The man with plans for the years ahead considers where his occupation is leading him and when necessary changes for better opportunities of advancement if he feels that he will not receive these chances where he is working. But no matter how dull or how intelligent a man may be, he will react to pleasant or unpleasant surroundings. If plant "A" has plenty of light, ventilation, safety appliances and sanitary conveniences, it will hold its employes better than plant "B," if the latter is of the type too frequently found a few years ago, with dark working rooms, poor ventilation and sanitation and no consideration for personal safety.

The Cost of a Poor Foreman

The best of surroundings and conditions cannot overcome the disagreeable personalities of the management. One Pacific Coast corporation has had a very heavy turnover in its shipping department due to a profane and domineering sub-foreman who has cost his employers heavily in men and money, but still retains his position. The fault lies in not having a proper method of clearing problems with employes and in not giving careful investigation to causes for too frequent discharges.

Another large corporation finds it a common occurence to have six and eight men in succession drop from the pay line and quit and the number of ex-employes in its city is beyond all reason. Its men quit and continue to do so on account of hours and wages and the personality of one executive. To the firm they give various reasons, when they give any, but to others in their confidence they tell the real reason for their acts and tell them forcibly enough to give credence to their tales, especially when the same story is repeated by man after man.

Preventing Discouragement

Too often the employe is not given sufficient training or information regarding his work, its place in the production scheme or what is expected from him. Such a man may make a few mistakes, grow discouraged by lack of progress and, feeling that he is making a failure and is liable to discharge, "beat them to it" and quit. A little more time spent in instruction or a day or so under an experienced employe might create an entirely different viewpoint and an effective worker. This is being handled in many places by means of lectures given to the employes accompanied by motion pictures illustrating phases of manufacturing and methods of production. It is serving to create an intelligent group of workers who understand the end toward which they are working and take pride in their part.

Men who respond best to methodical systems in working react unfavorably to any hit or miss pro-

gram in laying out their work. In one wholesale house opening at 7:30 a.m. the entire output of seven men in one of the shipping departments at nine in the morning recently consisted of one small package placed on a delivery truck. The foreman was not given his orders and working schedule sufficiently in advance to allow him to lay out the day's work before the men arrived. This fault, which is common to other departments also, is costing the company many thousands of dollars' waste time every year besides discouraging the employes from applying themselves and giving full value in their efforts . A few weeks at this sort of employment and the thinking employe changes for a better organized position where his efforts really count.

The Influence of Home Conditions

Some men are only concerned about earning a living, securing some pleasures and possibly saving a bit for the future; others have families whose welfare must also be considered. Then it becomes necessary to look into housing conditions, schooling, sanitation, the distance from the home to the work and the means of transportation. During the war period of unheard-of wages, when silk shirts replaced the flannel and the working man had trouble in finding a place to park his newly acquired automobile, he did not object to having to travel some distance in his new splendor. But now that the flannel has again come into its own and the automobile payments have been finished by strangers, distance and carfare are once more serious items.

Thus housing conditions play an important part in the employment scheme and in holding men on their jobs. If a workman (and the same applies as forcibly to the clerical class) is forced to live an unreasonable distance from his work in order to secure reasonable rentals, healthy surroundings and educational opportunities for his family, he will inevitably try to secure employment where these conditions exist and will hold his job only until he can secure such work. That this item is understood and recognized by his employers, is shown in the homes built by large organizations and furnished to their employes at reasonable rentals or sold on favorable terms. Provided with modern conveniences, attractively built and well finished, they play a very important part in binding the man to his work. If his family is suitably located and his home environment is pleasant, he will be a better workman and give better results.

Sometimes the part in a man's industrial life that is governed by domestic conditions is not fully understood or considered and his general efficiency is impaired where it could be increased by helping him solve some family problems and cares. Men who have been furnished good living accommodations, assisted to purchase their homes or allowed to buy stock in their company will take a personal pride in their work and in a way become individual efficiency managers for the company. Such men form the nucleus of any organization and play an important part in determining profits and dividends.

Personal Reasons for Giving Up

The "loan shark evil" which has sapped the life and energy of many a good worker has but recently been considered seriously by employers as a feature in the employe's efficiency. This evil has of recent years been forcibly brought to the public attention and means taken by both private and public organiations to offer a remedy. Tales of employes hounded for years by these sharks, working night and day to try and escape from their clutches, sometimes resorting to "borrowing" from the firm's money and sometimes resorting to suicide as a solution, have resulted in various methods being inaugurated to free the victim. In some instances the employers have established a loan fund on which the employe may draw when necessary or have placed their legal departments at the employe's disposal for counsel and advice or legal help when needed. In other instances a quasi-public loan association has been formed and sponsored by various business men to offer the working man the same opportunity to secure small loans in a business-like and secure manner. Such an institution is the San Francisco Remedial Loan Association backed by capital from some of San Francisco's leading public spirited citizens. Here the working man may secure temporary financial assistance at a reasonable rate of interest and with perfect security that he will be protected at all times. Witl. these remedies at hand the employed will not feel the discouragement of debts that he cannot seem to overcome and that he may try to avoid through leaving entirely.

Personal health always figures prominently with the employe and must often be considered as a necessity for change of occupation. Medical attention furnished at the right time can often help overcome disabilities which may later prove to be a necessary cause for losing a good employe.

Mixing Nationalities

In many large industries the employes speak a larger variety of languages than ever heard in Babel. The history of that ancient building enterprise shows that the newly created races didn't hang together very long and they have shown no great inclination to do so since. Danes, Swedes and Finns will not mingle satisfactorily, neither will an American work with an Oriental; the commercial dairies find it necessary to be very explicit in hiring milkers, to state the nationality that is at work for them, as the introduction of an outsider simply means trouble. In the South the color line is closely drawn and in other sections the racial question must be skillfully handled to avoid constant friction. Likewise some nationalities are of a calm phlegmatic nature, well fitted for routine work that does not tax the imagination or strain the mentality. They work well as long as they are shown what to do and are firmly handled; generally they have one or two leaders from whom they secure their ideas and whose lead they will follow almost blindly. Other nationalities of a more temperamental nature do best in an atmosphere that creates diversion; they work harder if they have

some goal in sight, whether a certain amount to produce within a given time unit or a rivalry between two sections. Any attempt to exchange either race would meet with poor success. To use the old saying, "You cannot fit a square peg into a round hole," and the same applies also to a square head.

Locating the Cause of the Trouble

The sources are varied from which the men's reasons for quitting can be obtained, the most feasible method being from report cards containing the personal data of each employe, which are closed before he receives his final pay. This method, if fully carried out, will give all vital statistics covering each employe, with proper space for reasons and notations when he leaves his employment. To be properly handled, all men leaving an organization should be cleared through a central employment department where each case can be individually considered. Such a course can often serve to clear some minor grievance and hold a trained employe—or he can be transferred to another department where he may give better service and be better contented. But, regardless of the actions taken, valuable information can be secured regarding causes for labor turnover.

It is true that the employe may not give his real reasons for leaving to a company official; sometimes through ignorance of our language, sometimes through fear of a "white collar," sometimes because the informant may fear harm from the source complained of or that he may jeopardize his chances for securing employment in the same locality or for many individual reasons. But close cooperation between the personnel or employment department and the workmen will clear up many causes.

One cause for the shifting of employes may be charged directly against the employer and reacts against him directly. This comes from the policy of bidding for skilled men through inducements of higher wages. This system caused so much trouble and unsettled conditions to such an extent in some of the plants engaged in supplying Government departments during the war, that a central department was created to fix wage scales throughout the country in some occupations. All items pertaining to wage rates were cleared daily through this office, giving a uniform rate, lowering turnover and increasing production through stabilizing conditions among many plants.

Expensive Mistakes

It is impossible to estimate the yearly loss in our country caused by unnecessary turnover. In individual organizations, the cost of placing a man on the job varies from a few dollars to many hundreds, where picked men are given intensive training. In a bulletin issued in 1919 by the Metropolitan Life Insurance Company of New York, the statement is made that the Dennison Manufacturing Company saved over $25,000 in two years through reduction of labor turnover among its employes. Likewise the Ford company reduced its discharges from 8,390 in 1913 to 27 in 1915 through centralizing its employment department and through transferring a man as many times as necessary until his proper place could be found.

Any study given to this subject or any method worked out that will tend to retain a man in his place, will react directly on the profit and loss statement and will merit careful consideration.

Economic Factors Which Determine Power Expenditures

The Engineer Must Determine If the Investment Planned Will Pay Interest on the Money Expended Through a Saving in Expense or Additional Revenue Before He Recommends New Power Construction Work

By L. J. MOORE
Executive Engineer, San Joaquin Light and Power Corporation

As a general rule every engineering work should justify its existence. In the business of providing electrical service to the public, new lines or extensions should bring in a financial return which will pay taxes, depreciation, and all such charges on the investment and also pay a reasonable rate of interest. Or, improvements to plants or lines should provide savings in expenses, which will pay the same return on their cost.

There are, of course, exceptions to all rules, and in some cases pioneering must be done. Some extensions are made when the immediate return is not sufficient to justify the expense; but prospects may be such that it is not easy to foresee that in a short time the desired result will be obtained. In other lines of work there often arise cases of certain works being necessary, as in municipal undertakings for sewage disposal, etc., for the interest of public health where there are no financial returns possible. No one would deny the advisability of carrying on these undertakings. However, the converse of our proposition is always true. If the financial return on any engineering work is sufficient the work is justified and economical.

The Economic Angle to Engineering

The successful engineer must first of all be an economist. He should leave nothing to chance; but must have sufficient vision to be always considering the future. He will have many proposals presented to him, and many ideas will occur to him; but he is not doing his full duty to the organization which gives him employment unless he considers the problems from all possible angles. He must, however, be of an open mind and able to recognize real value when it appears, regardless of the source.

The best way to show the working out of economic principles is perhaps to give a few examples.

Therefore, the following from actual practice are submitted.

Spending $100,000 to Save Money

A certain company was constructing a new hydroelectric power house. The construction period would extend over almost two years. Power was required for the construction operations. The generating capacity of the completed plant was such that a transmission line of considerable carrying capacity was needed but apparently not needed until the plant should be finished because an 11,000-volt distribution line already reached the site. The size of conductor on the distribution line was moderately large; but a glance at the map showed a distance from the substation of some thirty miles. This called for more careful attention and so an estimate of the cost of the transmission line was prepared and found to be about $100,000. Calculations were made of the power losses over both lines under conditions of construction and carrying the load already on the distribution line. A saving per year of very close to $15,000 was found to occur if the transmission line were constructed. This amount is seen to be 15% on the investment and about equal to the annual charges on the line as enumerated below:

Interest	8%	
Depreciation	2.78%	
Taxes	1.5%	
Maintenance	3%	15.28%

It is evident then that the line would pay its way and should be constructed at once, on account of the very much better service in voltage delivered than would be possible with the distribution line.

Calculating Future Returns

Another case which shows the principle from a different angle is as follows:

A certain consumer had an installation of 750 hp. at a distance of practically five miles from a substation. The distribution voltage from the substation was 11,000 volts. It was the consumer's plan to increase his demand to as much as probably 3,000 hp. This, however, was a very seasonal demand operating for not over 3½ months per year. Consideration was given to the size of conductor for carrying the load and to the question as to whether or not it was best to carry the load on the distribution line, or to install a substation stepping down from the 66,000-volt line which went directly past the installation. An old rule which was established many years ago says that it is economical to transmit power one mile for each 1,000 volts of the pressure on the line. According to this rule, it would be economical to continue to carry this particular load without any additional substation facilities. However, some calculations have been made, and the results are given in the following tables:

TABLE NO. 1

No. 2 H.D.B.C. Wire, 3-Phase Line, 5 Miles Long

No. 2—117-amp. capacity—cost approx. $4,147 without poles.

6600 V—Y—(11,500 v. between lines) P.F. of load, 100%—Syn. motors.

LOAD	Kw. Loss	Kw-hr. Loss 3½ months 2,520 hr.	Volts Loss to Neutral	Cost of Pr. loss @ 1c. per kw-hr.
750 hp.	1.76%		148 v.	
560 kw.	9.88	24,900	2.24%	$249.00
1500 hp	3.42%		296 v.	
1120 kw.	38.3	96,600	4.48	$966.00
2250 hp.	5.3%		445 v.	
1680 kw.	89.0	224.000	6.72	$2240.00
3000 hp.	6.95%		592 v.	
2240 kw.	155.5	391,860	8.96%	$3918.60

TABLE NO. 2

No. 1 O.H.D.B.C. Wire, 3-Phase Line, 5 Miles Long

169-amp. carrying capacity—costs approx. $2,800 to change wire.

6600 V—Y—(11,500 v. between lines) P.F. of load, 100%—Syn. motors.

LOAD	Kw. Loss	Kw-hr. Loss 3½ months 2,520 hr.	Volts Loss to Neutral	Saving in Power loss @ 1c per kw-hr.	Fixed charges on additional invest. @ 15%
750 hp.	1.1%		1.85%		
560 kw.	6.19	15,600	122 v.	$93.00	$420.00
1500 hp.	2.14%		3.7%		
1120 kw.	24.0	60.400	244 v.	$362.00	$420.00
2250 hp.	3.31%		5.55%		
1680 kw.	55.7	140,000	366 v.	$840.00	$420.00
3000 hp.	4.35%		7.38%		
2240 kw.	97.4	245,000	487 v.	$1468.60	$420.00

TABLE NO. 3

No. 3 O.H.D.B.C. Wire, 3-Phase Line, 5 Miles Long

240-amp. carrying capacity—costs approx. $3050 more than No. 1-O
" " $5850 " " No. 2

6600 V—Y—(11,500 v. between lines) P.F. of load, 100%—Syn. motors.

LOAD	Kw. Loss	Kw-hr. Loss 3½ months 2,520 hr.	Volts Loss to Neutral	Saving in Power Lossa over 1-O @ 1c per kw-hr.	Fixed charges t 1 5% on additional cost over No. 1-O
	2.09%		4.87%		
1680 kw.	35.2	88,700	317 v.	$515.00	$464.00
	2.77%		6.4%		
2240 kw.	62.0	156,000	422 v.	$890.00	$464.00

The wire already in position was No. 2 bare copper, and the calculations have been made of the power losses using this conductor and two larger sizes for the particular load in question, and also its increased value when the full installation would be installed.

It will be noted that to increase the present wire of No. 2 copper to No. 1-0 copper will cost $420 per year, while the saving on the present load would only be $93 per year. This data is taken from table No. 2. It would not, therefore, be economical for the present load to make any change in the conductor. In fact from a glance at table No. 2, it is seen that the saving in power loss does not equal the additional fixed charges until a load of something over 1,500 hp. has been reached on the line; but somewhere between 1,500 and 2,250 hp. the wires should be changed to No. 1-0 copper.

From table No. 3, when a load of 2,250 hp. has been reached, it is apparently economical to increase up to at least No. 3-0 copper. If the calculations were carried on up to No. 4-0 or thereabouts, it might be found that for 3,000 hp. it might be economical to go somewhat larger than 3-0 copper. However, to increase to No. 3-0 wire, for example, would only cost something like $5,850, while to install a substation immediately at the load would cost probably not less than $25,000. This all bears out the old rule of 1,000 volts per mile for transmission, and shows that it is not economical to make any change in the conductor until the load has been materially increased.

Modifying Circumstances

An interesting point in connection with this particular case is that if the load had continued for say, seven months continuously instead of 3½, the power losses in all cases would have been double, and the savings double, which would have worked out to the use of larger sizes of wire or, in other words, on account of the increased savings, greater expenditures would have been justified to effect the savings. This is due simply to the fact that interest, depreciation, taxes, etc., go on continuously, while power losses occur only when load is being drawn over the line, and if the period of time during which the load is carried is short in each year, heavier losses for the time being can be allowed, than if they extended over longer periads.

Instances of this sort could be enumerated without number; but they will all lead to the same conclusion that any public utility company selling service of any kind, must look into the different problems presented to it in some such manner as above noted. In this way only can possible financial losses be prevented, and uneconomical extensions and expenditures be averted.

Is There a Future in the Radio Business for the Dealer?

If the Wireless Boom Is Not to Prove a Boomerang But Is to Develop into a Business of Permanent Importance, It Must Be Placed on the Same Stable Basis of Merchandising as Other Standard Electrical Equipment

By TRACY BIBBINS,
President, Pacific States Electric Company

ALMOST over night the radio industry has changed from a modest group of inventors and manufacturers, earnestly and quietly overcoming difficulties and developing a new business, into a riotous, clamoring and heterogeneous collection of producers, distributors and buyers. The grip of radio on the imagination and the widespread publicity which this invention has received, has stampeded the American public more completely than any gold rush or any oil find ever has.

Everybody's Doing It

A list of the various classes of retailers who are selling radio supplies, just compiled by the American Radio Journal, indicates clearly the disorganized condition which prevails. The list includes the following dealers: hardware, phonograph, electrical, department stores, plumbing, sporting goods, stationery and toys, drug, radio exclusive, jewelry, haberdashers, mail order houses, dry goods and general stores.

In the manufacturing field the condition is much the same. Many producers of commodities which have no natural similarity with radio have been influenced by the apparently fabulous opportunities offered, and have turned to its manufacture without the proper experience or facilities. The result of this type of manufacture and distribution can only be the circulation of products which will give unsatisfactory service, weaken public confidence and interest and cause the demand to lessen.

Dangers of a Boom Condition

From the standpoint of the electrical industry, the radio business requires the application of considerable caution. There can be no doubt that radio equipment will become an important item for distribution by electrical dealers as soon as the radio industry has become established. I believe that radio has come to stay and that the demand for radio supplies will persist. But that demand as applied to the near future will depend upon the speed with which the radio industry becomes organized as to production and distribution, and in the meantime many electrical dealers are laying themselves open to disaster by neglecting their established lines of electrical equipment. The old saying that "all is not gold that glitters" certainly applies to this situation. The radio business is glittering so brightly before the dazzled eyes of many electrical dealers that they are casting all caution and conservative business judgment to the winds, and turning aside from the sound and well known lines of electrical appliances and materials to sell a new and untried commodity.

Two undesirable effects are sure to follow such action. By neglecting their regular customers—people who are interested primarily in buying electrical appliances and equipment—dealers are likely to lose trade which is of permanent value, and which represents one of the definite assets of their business. Also, the sale of material of doubtful value—and a substantial part of the radio material now for sale is of that sort—is a dangerous practice. Dealers are apt to lose caste and even forfeit the good will of their customers by distributing shoddy and unserviceable radio equipment.

The Value of Stable Business

The sale of standard electrical appliances and materials shows, as a maximum performance, an increase of fifteen per cent yearly. In other words, a dealer will double his volume approximately every five years, if normal conditions prevail. Under such circumstances, the sale and distribution of recognized and dependable lines of electrical appliances and equipment presents a very attractive opportunity and one which dealers should not neglect.

Another point worthy of mention here is the pyramiding of radio orders. A buyer goes to a dealer for a certain piece of radio equipment, which the dealer is out of or hasn't been able to get,—the dealer says he'll order it, and the buyer says all right. But he wants that part right away so he goes to several other dealers and goes through the same procedure, with the result that perhaps a half-dozen orders have been placed for the same piece of equipment and five out of six of the dealers are going to have unsold equipment on their hands. It is business of this sort which dealers in radio supplies will have to guard against if they don't want to stand serious losses.

A Good Future in Radio

To sum up, then: I believe that the radio business, as soon as it outgrows certain deficiencies which are inherent to a new industry and the result of an abnormal demand, will be a very good and desirable line for electrical dealers to carry. But I want to lay particular emphasis on the necessity of stabilizing the radio business and of the advisability, as far as dealers are concerned, of distributing only those items of radio equipment about whose worth there can be no question. Further, I want to call attention to the need of putting radio in its proper place in relation to other lines of electrical merchandise. It should receive its share of sales attention, but established lines of electrical equipment should not be neglected for it.

Three Methods of Manufacturer to Consumer Merchandising

The Second of a Series of Articles Devoted to an Analysis of the Modern Tendencies in the Marketing of Products and the Advantages of Different Types of Distribution Methods as Applied to Various Classes of Goods

By E. A. KINCAID

WHILE there is a tendency, both past and present, to obtain distribution through the existing channels of distribution, manufacturers not infrequently sell their products directly to consumers, without the intervention of a middleman, through one of the following channels: (a) to the consumer by means of canvassers or solicitors; (b) to the consumer by mail, and (c) through the manufacturer's own retail stores. Each of these routes to the consumer represent distinctly modern tendencies in distribution —departures from the orthodox systems of distribution— which are by no means the result of accident. On the other hand, these new methods of distribution are the direct result of economic problems of manufacturers which press for solution. The manufacturer is not fond of innovations for their own sake and he is not actuated by curiosity and a desire for experimentation. Neither does he seek to destroy the middle-man nor in any way weaken his position except insofar as may be necessary to preserve his own industry. The modern manufacturer uses the scientific approach to his problems of distribution. Through his own advertising department or through advertising agencies data are gathered and sifted and in this manner the correct principles of a sound system of distribution are worked out. When the data are carefully gathered and properly interpreted the true principles of marketing come to light. The method is not only scientific but it is in harmony with these rules which have been the means of success of so many great business men. While socialists and others have attributed the great fortunes of some of our successful business men to luck, the fact is that nothing could be further from the truth. Most of the great achievements in the field of industry or in business are the result of adherence to sound principles. When matters have gone awry the successful business man turns to the principles upon which his enterprise has been built or to their application in order to find explanation for his troubles. There is an ever-growing tendency to find out the true principles of procedure in business and to build business on fundamentals revealed from research.

Distribution direct to the consumber by canvassers or solicitors is not a new method of distribution. In fact it is one of the oldest of those in use in this country. The tin industry of the United States became assured of success because of the selling abilities of the Yankee peddlers of tinware. The work of these peddlers in opening up markets for tinware gave Connecticut manufacturers the great impetus of an early start which has had so much to do with the concentration of other large industries there.

While distribution by means of peddlers or canvassers is old, it has remained for modern manufacturers to adapt it to present-day problems. One of the notable instances of selling directly to the consumer by means of canvassers or solicitors is that of the Fuller Brush Company. This company rejected the plan of selling through dealers, the easiest way to reach the consumer, because it is sought to make Fuller brushes into specialties which would stand out from the common run of brushes. The Company proposed to manufacture superior goods and to have a brush for every purpose. In order to educate the public as to the merit of its goods the Company had to take over the distribution of its brushes and put the selling in the hands of highly trained specialty salesmen. To build up a market in this way the Fuller Brush Company had to start in a small way, train a staff of salesmen and be content with a small initial volume of business for the sake of possibility of a large ultimate market—a market which, once established, would be in the exclusive control of the manufacturer.

Success of Fuller Brush Company

The Fuller Brush Company has succeeded in accomplishing this difficult task and no middleman stands between it and the consumers of its products. The manufacturer is in control of production and distribution and the co-ordination of the two is thus vastly simplified. The Fuller Brush Company has trained and placed in the field a staff of 3,500 selling representatives which has been trained to put the Fuller brush in a class by itself. The work of the Company's selling representatives is backed up by an effective advertising campaign and the co-ordination of the personal selling with the advertising has been so successful, that the sales of the Company have grown from $184,525 in 1913 to $8,367,474 in 1921. The advertising appropriation in 1921 amounted to $275,000, and it seems to have been spent in an effective way. The results obtained by the Fuller Brush Company are sufficient proof of what can be done with this method of distribution. Had the Company chosen to distribute through dealers it would have avoided the problem of selecting and training its staff of solicitors and it might have left the advertising to dealers. As compensation for the assumption of the selling function with all of its attendant burdens the Fuller Brush Company has access to a market which is exclusively within its control, a condition which has placed its manufacturing business on a stable basis and made it independent of middlemen.

The Use of the Mails

The problems which the Fuller Brush Company faced were fundamental and typical in that many

manufacturers are confronted with the same problems. These problems are of a two-fold character, (1) the obtaining of that volume of sales which will permit of production at the lowest cost of production per unit of output, and (2) a more economical method of gaining this volume. The process of gaining this more efficient distribution has come frequently to mean distribution through channels other than the customary one from manufacturer to jobber to retailer. The Witte Engine Works is another example of a manufacturing concern that has sought more direct access to the consumer. However, it did not adopt the use of canvassers, but chose the mail route. In adopting selling by mail the Witte Engine Works was led into the field of marketing and it was thereaffer both a manufacturing and a distributing organization. When a manufacturer enters into the distribution of his own product he has first of all to settle the marketing problem and then to work out the merchandising problems—those problems which relate to the free flow of the factory output through the channel that has been selected. The chief problem in merchandising is selling. The Fuller Brush Company chose solicitors and advertising was made the instrumentality for effective merchandising. The Witte Engine Works chose the mail route and used advertising as the chief instrument for effective merchandising. The Witte Engine Works manufactured a gas engine and it looked to the farm market for one of its promising outlets. The farm market was reached by means of advertising in farm journals but the advertising had to be worked out with great care for it is not an easy matter to build up a market for such goods as engines by the mail route. To make advertising do the work of personal salesmanship was the task assumed by the Witte people.

Making the Customer Sell

The work began in a small way and was made to succeed, for every customer was converted into a salesman for the company's product. This was accomplished by emphasis on service and quality. The engine was of such quality and the merchandising policies of the company were of such a character that it was possible to gain and hold the confidence of every buyer. On the foundation of confidence the company built up a market for its product. The possibilities of such a market were recognized by the officials of the company and it was known that the manufacturing end of the business did not so much require a large number of buyers as a sufficient number of satisfied buyers. Suppose the Witte Engine Works was specializing in a gas engine costing $500. Two thousand buyers a year would insure a business of $1,000,000, quite aside from sales of parts for repairs. The officials of the company recognized the principle involved in this illustration and they have realized it in practice. A sufficient number of buyers have been reached by mail to provide a stable business for the factory and the business is expanding.

Another Example of Selling by Mail

The principles upon which the success of the Witte Engine Works was built have been applied with equal success by the Ottowa Manufacturing Company, a Kansas corporation which manufactures log saws. It is another case of selling by mail backed up by advertising. This company was induced to adopt this method of distribution as the result of definite economic problems. Such products as gas engines and log saws do not find many buyers in any one locality. Moreover the lifetime of such goods is comparatively long. If the goods were handled by dealers the volume of sales to be expected would not be great. Because of this fact it is not easy to induce retailers to carry such goods in stock and it is not safe to leave to them the pushing of the goods by other methods than actual exhibition of the product. The best chance of the manufacturer to secure effective distribution through dealers will come after his goods have been advertised and a demand created. Meanwhile the manufacturing business cannot go ahead without orders.

The experience of the Witte Engine Works and the Ottowa Manufacturing Company are instances of what a small and struggling manufacturing business can do with selling by mail and effective advertising. Remote regions can be reached and demand can be established in localities that could not be reached through dealers. A wider market is made available—a market which can be reached directly from the factory—and the problem of interesting dealers in widely scattered regions can be avoided. Thus it has come about that young and struggling industries have found places in the sun and it is certain that they would never have made places for themselves with any other system of distribution. Selling by mail backed up by advertising is thus responsible for the origin and development of new manufacturing enterprises.

Manufacturers' Retail Stores

A third method of selling direct to the consumer is by means of the manufacturer's own retail stores. When a manufacturer operates his own retail stores he becomes a middleman in a very different way than any so far considered. Factory distribution by means of solicitors and by mail does not constitute an invasion of the field of the middleman so much as an evasion of the middleman. But distribution through the manufacturer's stores is a direct invasion of the recognized field of the retailer. Practical activities in this field vary a good deal. Some manufacturers operate one or more retail stores for the purpose of forming contacts with the consumers of their goods and thus studying demand at first hand. In this way information is obtained which makes it possible to educate dealers with respect to the merchandising possibilities of their goods. Other manufacturers undertake all or an important part of the distribution of their goods by means of a chain of retail establishments exclusively owned and strategically located. The managers of these stores receive sal-

aries as employes and they are in no sense independent merchants. Still other manufacturers enter into exclusive selling arrangements with select stores which become affiliated with the manufacturing corporation by means of stock ownership. The Winchester Repeating Arms Company operates stores of this character. The Regal Shoe Company, Hanan & Son and other manufacturers operate retail stores. The W. L. Douglas Shoe Company operates retail stores but it does not distribute the factory output exclusively through these stores. It will and does sell to independent retailers. On the other hand Browning, King & Company manufacture clothing and sell it through their own stores exclusively.

Reasons for the Invasion

The main economic force back of the manufacturer's invasion of the field of retail distribution has been the desire for a greater volume of sales. Often a greater volume of sales has been absolutely essential to the continued operation of the factory on a paying basis. A secondary consideration has been the necessity of rendering service which is an indispensable factor to effective selling. Concerns like the Yawman & Erbe Manufacturing Company have found it necessary to enter the retail field because the demand for their products depended upon a knowledge of correct filing methods. Not infrequently the manufacturer's product is of such a character that its distribution cannot be left to the independent middleman. The dealer is not equipped to do efficient merchandising and his inability in this respect may so reduce the volume of sales as to menace the prosperity of the manufacturing end of a business. If the manufacturer operates his own retail stores he is in a position to deal effectively with a number of merchandising problems such as the resale price of his goods, the coordination of advertising and selling, the problem of substitution, the whims of consumers, discovery of defects in his goods, discovery of new selling points, a sound knowledge of retail selling costs, the determination of proper margins and mark-ups, and the training of traveling salesmen. When the manufacturer has had opportunity to study his own goods with respect to the various problems he is in a position to bring home to the independent retailer his merchandising possibilities and thus pave the way for a shift to independent retailers in whole or in part.

Disadvantages of This Method

While these advantages are obvious there are some equally evident disadvantages of distribution by the manufacturer through his own stores. The Kelly-Springfield Tire Company recently abandoned its retail branches chiefly because of the economies which could be realized in that way. The action of this company but serves to emphasize the fact that manufacturers' retail stores have often been operated at a loss. The stores must be highly efficient to gain all the advantages which have been mentioned and to make them models of their kind has proved most expensive. Furthermore, when a manufacturer operates his own stores and also looks to independent retailers as a partial outlet he is subjected to the necessity of competing with his own dealers. The Sherwin-Williams Company has sought to avoid this problem by refusing to open retail establishments in places where a satisfactory distribution can be obtained through existing dealers. Where this policy is not adhered to it is difficult to gain the good will of the independent retailer and the manufacturer may be confronted with the necessity of giving up his own stores or else doing his own retailing exclusively.

It cannot be said that distribution through the manufacturer's own stores is capable of wide adoption. There are well defined limitations to distribution through this channel and the advantages must be very real to offset the disadvantages which are inherent and potential. Not only is the amount of capital required for such a method large but it may become so great that the manufacturer must depend in part or in whole upon independent dealers. If this time should come they may remember him as a former competitor, to whom no courtesy is due. Manufacturers' stores may be expected to function well for a limited number of fairly specialized products and in a limited way for certain staples. If the independent retailer will go to the trouble of analyzing the manufacturer's problems of distribution he can provide outlets for most goods which are more economical and fully as efficient as those which the manufacturer can provide only at great cost and risk to his manufacturing enterprise. In practice the merchandising of goods through the manufacturer's own stores has not paid its way and the profits of the factory have been eaten into to make up for the losses of the distributive system. This is justifiable when the increased volume of factory output affords enough higher profit to offset the costs of distribution. Unless it does this manufacturer's stores are a failure.

In general it may be said that distribution direct to the consumer by the three methods considered herein has been undertaken with the hope that the increased profits from a stabilized and dependable output for the factory will take care of distribution costs which are generally higher than those incurred by independent retailers.

RADIO BULLETINS

The Journal of Electricity and Western Industry broadcasts a special industrial and business news report each Monday night at 7:30 o'clock, both from San Francisco and Portland. The San Francisco report is broadcasted from station KLP, operated by the Colin B. Kennedy Company at Los Altos, California. The Portland report is sent out by the Northwestern Radio Manufacturing Company from station 7XF. Both reports are broadcasted on a wave length of 360 meters.

Eliminating the Waste in Industry

Shortcuts in Management and New Power Applications Which Have Been Adopted in Western Industrial Plants for Eliminating Waste, Increasing Production and Cutting the Cost of Manufacturing Processes

Manufacturing Methods and Concrete Structures

A Discussion of the Principles of Waste Saving Which Have Been Applied in the Erection of Don Pedro Dam in California

The Don Pedro Dam of the Modesto and Turlock irrigation districts on the Tuolumne River, is an excellent example of the trend of modern manufacturing methods as applied in the construction of large public works. There are few finer installations of waste saving machinery anywhere than is now in use in the construction of this 280-ft. concrete dam.

The whole basic idea underlying the construction plant was to take advantage of the natural arrangement of the ground, which favored the gravity handling of the main mass of materials, and this utilization of gravity plus an intelligent use of small locomotive cars and cable ways, has resulted in a plant which is very nearly the last word in the conservation of materials and the saving of unnecessary manual effort.

Sand and Gravel Plant

About forty miles from the dam proper the irrigation districts have built a modern sand and gravel washing and screening plant. The raw sand and gravel is taken from the bed of the Tuolumne River by means of drag line excavators, and is loaded into small trains and hauled to the washing plant. These trains dump one car at a time into an unloading pit and the material is hoisted to the top of the washing plant by means of an endless inclined belt conveyor. On top of the structure is washing and screening machinery, and the materials fall by gravity into the proper bins. The material divides into three classes: sand, gravel, and cobble, up to approximately six inches in diameter. This material is hauled to the site of the dam in fifty-ton, standard bottom dump cars which discharge from the top of an elevated trestle, which is sufficiently long to have a capacity for approximately twenty-five days' material.

The Mixing Plant

Underneath the piles of sand, gravel and cobble, at the base of this long elevated trestle are tunnels in which are operated small trains pulled by gasoline locomotives. The rock, sand and gravel is dumped through specially designed gates into these cars, and the correct proportion of each is included in a rtain load, so that no further mixture of materials is required before dropping into the concrete mixers. Two of these concrete mixers are installed, and have a combined capacity of 1,200 yards of concrete in eight hours.

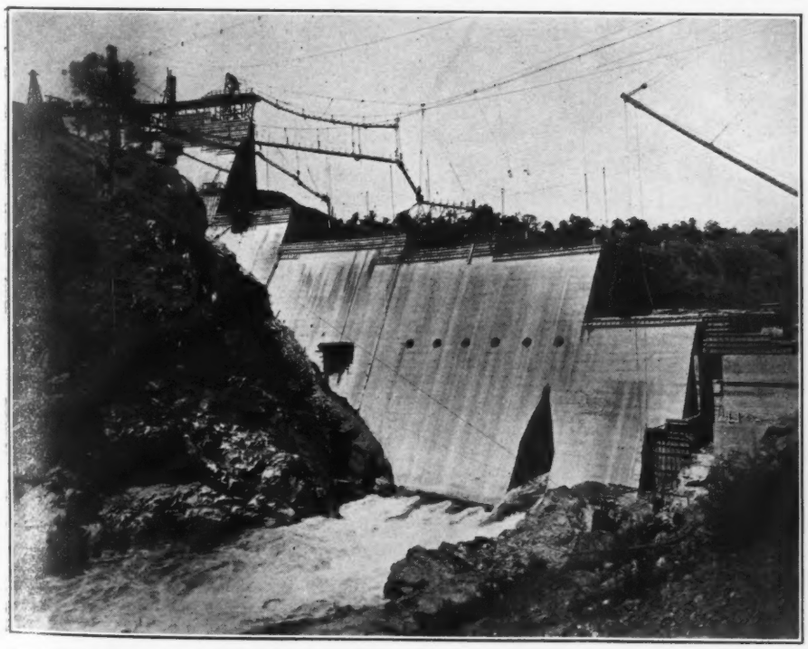
In addition to the sand and gravel, cement is also held in storage, but the greatest amount of cement used is not put in storage at all but is taken directly from the loaded box cars and carried by conveyors direct to the concrete mixers. In this way the very least amount of labor is used in handling and the very smallest possible loss in cement occurs, due to this minimum of handling.

There is installed in this plant adjacent to the concrete mixers a special equipment for recovering the cement, which adheres to the sacks after their contents have been dropped into the mixer. This equipment consists of revolving drums in a dust proof room with appropriate collecting devices, and the results to date have been a recovery of nine-tenths of a pound of cement per bag. With this average holding good for the remainder of the job, the enormous total of approximately 10,000 bags valued at approximately $10,000 will have been recovered. In addition to the cement recovering equipment there is a sack baling machine installed, which takes care of the necessary counting and handling of the empty sacks which are returned for credit. By means of this efficient bag shaking and bag baling equipment sacks are returned to the cement companies in the very best condition and with the least possible rejects, which means also the saving of a very large sum of money that otherwise might be lost if the old careless methods of shaking and baling were in vogue.

As will be noted from the accompanying photograph, the mixed cement is delivered to the dam by means of gravity troughs which are supported from aerial cables stretched across the top of the dam. The mixed material is taken from the concrete mixers in small trains run by gasoline locomotives, and the cars dump into hoppers at the mouth of these troughs. The lower end of the trough is flexibly handled and the material is delivered like water from the end of a hose.

On account of the size of the dam, a very small amount of wooden form work is necessary and, as will be noted from the photograph, the whole structure is built up in a series of terraces, the top one of which forms the finished level of the main structure.

This dam in the truest sense of the word may be said to be manufactured instead of built, as even the stairway treads and other special features are cast in cement molds in the shops, which are a part of the main plant. In this way every section of work, contributory to the main feature, is prepared in advance and allows the main structures



A view of the Don Pedro Dam being erected on the Tuolumne River in California by the Turlock and Modesto irrigation districts, showing the labor saving methods used in pouring the concrete. This is but one of the waste-saving principles which have been applied in the erection of this huge concrete structure.

to go forward in an orderly and speedy manner.

The practice of cement sack shaking with proper counting and baling as handled in this job, is well worth the attention of every manufacturer, because cement is used in every plant and a preventable waste can be easily and profitably eliminated.

Highly Efficient Cargo Conveyor Developed in Seattle

The desire to achieve the greatest degree of efficiency possible in the loading and unloading of the vessels which dock at the water terminals of the ports of the Pacific Coast has resulted in the development and application of material handling machinery to a degree hitherto thought unattainable. The Port of Seattle in connection with its planning and construction program of its marine terminal system, has adopted the policy of providing these harbor facilities with the most modern and up-to-date mechanical handling devices.

Among this mechanical handling machinery will be found several highly specialized labor-saving devices which have been planned, designed and constructed by the engineering department of the Port of Seattle.

The latest equipment to be added at one of the large municipal marine terminals is known as a "Ship Cargo Telescopic Conveyor," which is shown in the accompanying photograph. The view shows the conveyor working under the extreme condition of unloading a light vessel at high tide.

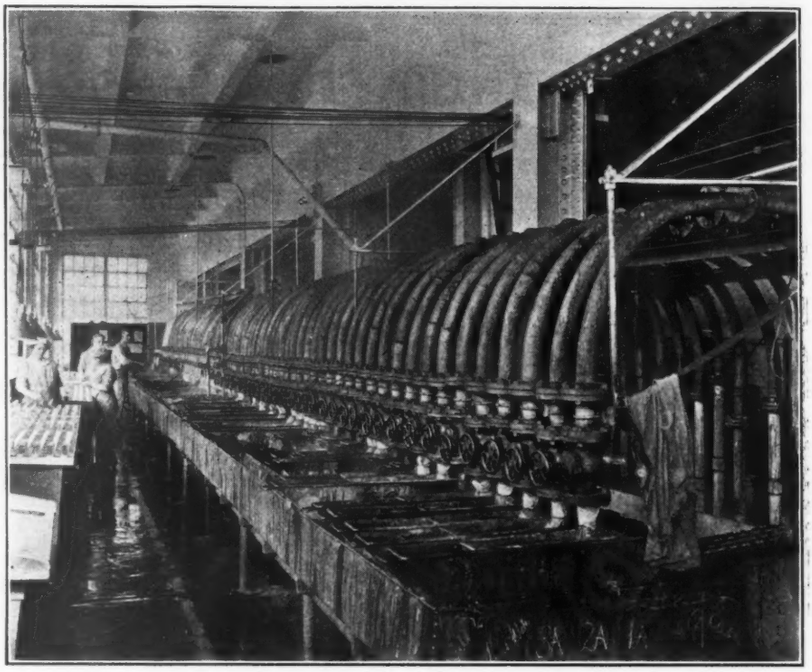
The equipment consists practically of a conveyor within a conveyor, so arranged that the major material handling machinery is lengthened or shortened by extending the interior conveyor. Any alteration to the major equipment is performed by power and not by manual labor, resulting in a considerable saving in both time and money.

The length of the conveyor extended is 45 ft. and the length collapsed, that is, with the extension raised to the highest point, is 28 ft. The width overall is 5 ft. 6 in. and the depth overall is 4 ft. 6 in. The machine is compact throughout. It can be supported at both ends, or at one end and the center, or at the two ends and the center. The estimated weight is 3½ tons, or such that the entire piece of equipment can easily be handled by the ship's boom. The motor equipment consists of a 10-hp. squirrel cage, 3-phase, 60-cycle, 440-volt a.c. induction motor operating at a speed of 1,200 r.p.m. The motor is equipped with an auto starter. Silent roller chain drives are used both for the conveyor and telescoping equipment.

The equipment has a capacity of 125 tons per hour at a speed of 75 ft. per minute and its use will cut the time required for loading or unloading a vessel by half. With the present method of loading and unloading cased salmon, the capacity of the terminal is 800 to 1,000 cases per hour. With the use of this equipment the capacity will be increased to 2,000 cases per hour. It has been designed to handle boxes, sacks and bales up to a maximum weight of 500 pounds and a maximum size of 2½ ft. by 2½ ft. by 5 ft. The commodities which it has been designed to handle consist of cased salmon and milk, two of the principal exports of the district, cased goods of all kinds, sacked goods of every description, including rice, sugar, grain, beans, etc., and also baled commodities such as cotton, hemp and silk. In the case of bales weighing more than 500 pounds, such as rattan, furniture and the like, ample provision has been made for handling these with the ship's boom, as the conveyor covers but a small portion of the hatch opening.

The conveyor has also been designed for use on transferring cargo from one portion of the transit shed to another and from ship to warehouse through the transit shed. The estimated cost of the device is $2,400 per conveyor, including the extension and full equipment.

Officials of the Port of Seattle expect that this latest application of material handling machinery to loading and unloading a ship's cargo will revolutionize the handling of ocean freight on the Pacific Coast.



CHEMICAL TESTING IMPORTANT IN SUGAR REFINING

The above view illustrates the importance placed by manufacturers on the close chemical control of their product. From this station the factory chemists can tell the condition of every filter in the plant. It is termed the "pulse" of a modern sugar refinery.

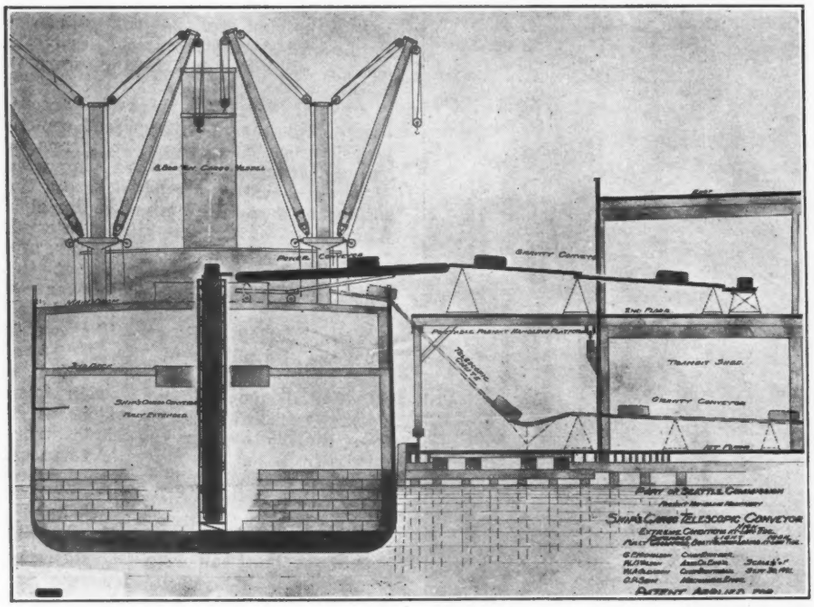


Diagram of a vessel unloading at the water terminal of the Port of Seattle, showing the newly designed telescopic conveyor operating in the hold of the vessel, together with the other highly specialized material handling devices used for expediting the handling of cargo either from vessel to wharf or vice versa. The diagram shows the device operating under the extreme condition of light cargo at high tide.

Western Dealer, Jobber and Agent

Business building suggestions for the store — Distribution and warehousing methods — Advertising and sales promotion ideas

There is Business in Show Window Illumination

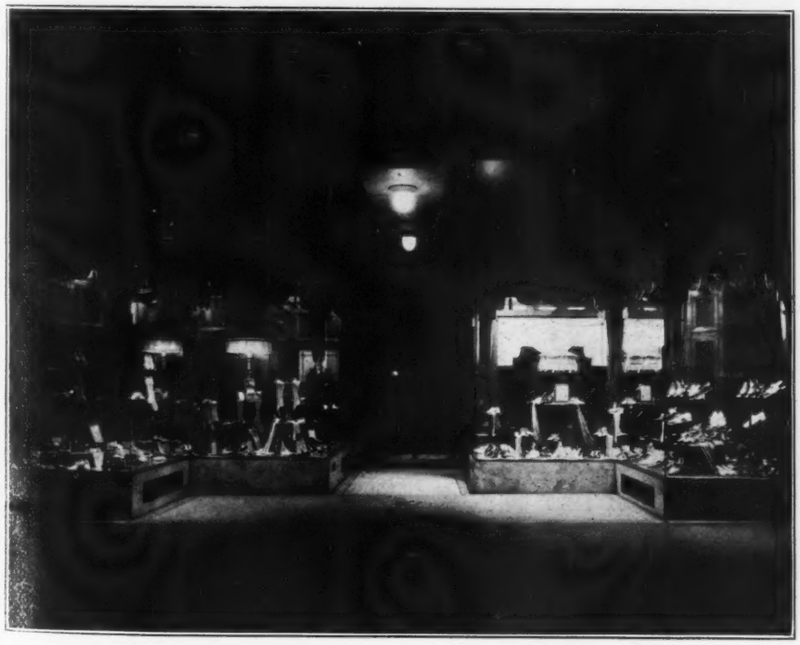
A $300 Installation in a Los Angeles Store Results From a Simple Demonstration Based on the Foot-Candle Meter

Armed with a foot-candle meter, and a few figures, the contractor-dealer who is in search of new business has two weapons which are as powerful as poison gas and a battery of 75's when opposition looms up in the way of a sale. Every merchant in his city whose display windows are lighted at night becomes a prospective victim for his attack and every merchant is open for a sale under such circumstances. Heed what happened in Los Angeles under similar circumstances and become convinced.

The Wetherby-Kayser Shoe Company deals in exclusive foot wear. They appreciate the value of good show windows second to none among their competitors. They always had good windows, and thought them well lighted. The windows were well lighted. But the company did not know that four times as much light on the displayed merchandise could be effected with one-third the cost for electricity. Nor did they believe it until the lighting specialist from a local contractor-dealer establishment came along with a foot-candle meter, a few reflectors and a few of the proper type bulbs.

A demonstration window was set up by the lighting specialist to prove to the members of the company that they were not only wasting money but were also failing to display their merchandise to the best advantage. Some surprising figures resulted. For instance it was found that the demonstration window, which was the brightest, consumed but 1,260 watts while the old window consumed 3,525 watts without near the effect. Further, by actual check, it was found that in one hour, 182 people paused to look at the window which was equipped with the proper reflectors and only 91 stopped to look at the other. And lastly, the foot-candle meter showed that light was falling on the merchandise in the two windows at a ratio of 22 to 5, with the poor window consuming the most current.

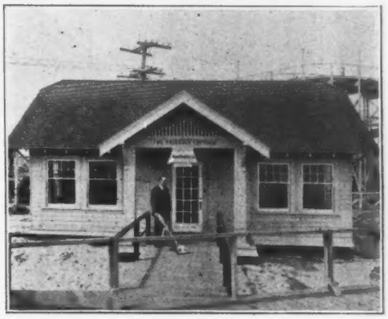
The demonstration required but little time and effort on the part of the lighting expert employed by the contractor-dealer, yet it resulted in an immediate sale of $300 worth of fixtures for the two windows.



A $300 installation of fixtures resulted from the test demonstration pictured above. One window is using 3,525 watts while the other, equipped with proper fixtures, is using but 1,260 watts. The ratio of illumination on the merchandise in the two is 22 to 5. The window using the least current is the brighter. The display was arranged by the illumination department of the F. E. Newbery Electric Corporation of Los Angeles.

Electric Bungalow Erected at California Beach Resort

The summer vacation visitor who has plenty of time on his hands is induced to spend some of it in the study of the method electrical in a neat little bungalow which has been erected on the board walk at Santa Cruz, California, one of the popular Northern California beach resorts.



This tiny electrical home has been erected on the board walk at Santa Cruz, California, popular beach resort. It tells the complete electric story to the thousands of vacationists who visit the resort. Walter Cox, whose company installed the electrical equipment, is shown demonstrating a vacuum cleaner on the porch.

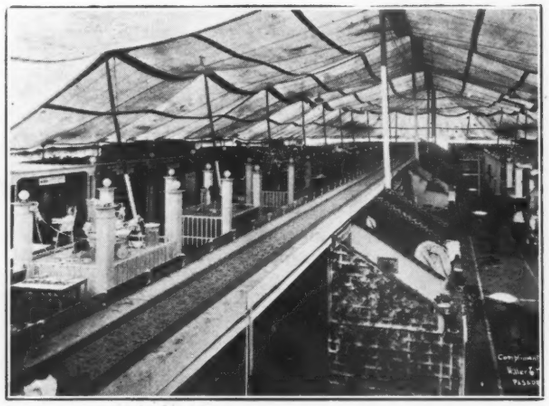
Wood Bros., builders of portable houses, are responsible for the bungalow itself, which serves as an advertisement of the summer homes they are prepared to erect. The electrical installation has been supplied by the Walter Cox Electric Company of San Jose. A local furniture store has supplied complete home furnishing equipment.

The miniature electrical home is complete in every detail, insofar as the small space to be furnished will allow. There is a small range, various kitchen appliances, a vacuum cleaner, and a complete array of dining room table devices such as a percolator, waffle iron, grill and the like. Power to operate the appliances is furnished free by the Coast Counties Gas and Electric company.

The tiny electrical home was opened to the public on July 1, 1922, and on the holiday over the Fourth, more than 5,000 people examined the equipment of the cottage. As this is one of the most popular beach resorts in northern California, it is expected that between 30,000 and 40,000 visitors will have been instructed in electrical home conveniences before the present vacation period is over.

Industrial Fairs Furnish Good Merchandising Prospects

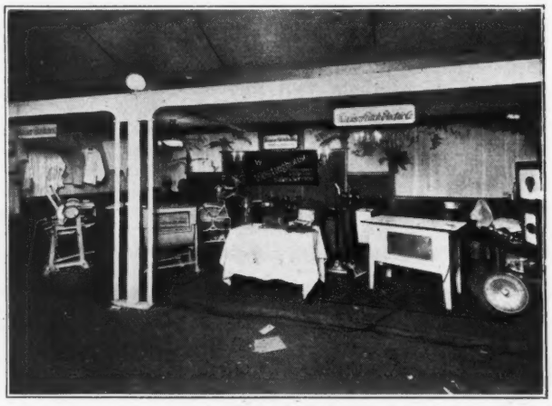
Actual Check on Expense of Exhibits and Profits Made as Direct Result of Such Activity on the Part of Southern California Contractor-Dealers Proves Conclusively the Value of Participating in Fairs



A typical industrial fair in a city of 50,000 which was visited by 20,000 people during the week it was open. Contractor-dealers who took part secured large numbers of prospects for appliances.

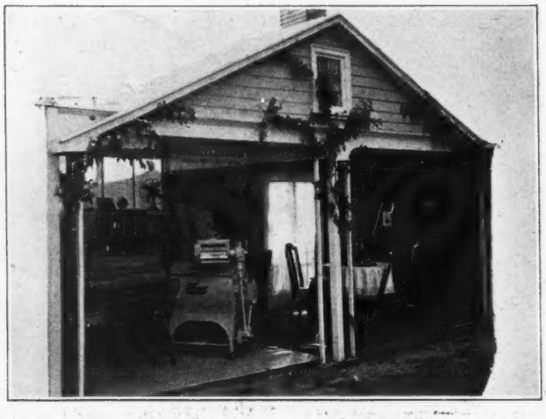
This booth, prepared by the H. L. Miller Company, Pasadena, won the first prize at an industrial exposition. Its real value was in the amount of new business it secured for the company.

The Jewel Electric Company of Glendale, is another enterprising company which realizes the value of constantly emphasizing the electrical story to the public. Increased sales are the result.



The electrical industry comes forward one hundred per cent when called upon to participate in county fairs. This is the display arranged by the Harrison-Fitch Electric Company, Pomona.

Southern California electragists are firm in their belief that there is no better place for securing prospects than the industrial fair. J. A. Newton Electric Co. prepared this booth.



A tiny two-room electric home constituted the display of the Glendale Electric Company at a recent trade show. It was one of the most popular booths in the fair for it carried a real message.

Telling the Electric Home Story in a New Way

What the Denver Electrical Cooperative League Has Done to Capitalize on the Number of Small Homes Being Erected

By S. W. BISHOP
Executive Manager, Denver Electrical Cooperative League

One of the most notable developments in the building boom now evidencing itself throughout the country is the construction of small dwellings. Economic experts say that this is a logical result of the serious housing conditions experienced after the war because, since the armistice, it has been the family with small means that has suffered the most.

Now, however, "the old order changeth" and with a decrease in building costs Mr. Average Wage Earner is seeking relief from high rent and cramped quarters by building himself a home. It may be a garage, bungalow, or a commodious two-story dwelling. The main feature is that it can be called home—one in which the interior decorations will be something more than rent receipts.

Judicious economy is generally exercised in laying out money for buildings of this type. On the other hand, the builder has some thrift in his make-up and is consequently on the alert for effecting a saving in the original cost, maintenance or operation of the house in question.

Here is where Mr. Electragist enters.

In the first place, the builder must be warned about false economy in so far as the electrical installation is concerned. Just because a house is small is no reason why wall switches or convenience outlets should be eliminated. There would be no justification for installing a plumbing system only 50 per cent efficient. Similarly this logic applies to the electric wiring, but the builder unfortunately must be convinced oftentimes that a wall switch is an absolute necessity and a convenience outlet is not a luxury.

Unfortunately the plans for these small structures are generally the product of an unexperienced imagination—that of the builder, his contractor or anybody but an expert. A job of this kind should be one for the man who knows but it is seldom the case. Sometimes he does know but on account of a certain aggressiveness it is made a "dollars and cents" proposition where there will be a maximum return in profits and a minimum return in satisfaction.

Expert advice is usually the one thing which is most lacking on a job of this character. It necessarily behooves then the electrical contractor to impart some of his knowledge providing no other means are available to combat the ignorance. He must not be like the "curber" who is always on the qui vive for outlets which can be eliminated.

Unfortunately many prospective purchasers, and in this case builders, immediately assume a defensive attitude when the vender attempts to advise them intelligently as to their possible needs. Some people apparently resent this kind of interest so they are eliminated from the present consideration. Of chief concern should be those people who can be won over by intelligent methods such as personal advice, educational literature, authoritative information, and best of all, by means of ocular demonstration where the person can be shown by visual methods the requirements, present and future, in his own case.

Certainly no better means than an electrical home exhibition can be secured for "telling the story" but there are few communities in which these displays have been made, and even in those places where cooperative or similar movements do exist, it is not possible to have a continuous exhibition of this nature.

How then can the idea be best put over?

One solution has been developed in Denver that has materially aided in improving the electrification of small homes. It has been possible through the work which the Electrical Cooperative League in that city has done with an organization of architects, built along similar lines and known as a small house service bureau. In so far as the organization is concerned, the idea is not new because the same scheme has been developed in other communities by divisions of the American Institute of Architects.

What is new, however, is the development of closer relations between the electrical industry and this architectural group. The Denver organization is backed by about twelve of the leading architects and their primary purpose is to provide a more intelligent architectural service for the builder of small means at a nominal cost.

The situation may be better understood if the scheme and procedure of the architects' bureau is grasped correctly. Because, as is generally known, the builder of the small house does not secure the services of an architect, it means that class of house is suffering in design, appointments, refinements and character because of the lack of this service. The chief reason for dispensing with the service, it is generally agreed, is the cost of plans, supervision, etc. To obviate this condition, the bureau conducted a prize contest amongst its members for the best designs in small homes ranging from four to eight rooms, most of which are of the bungalow type.

Fifty-two designs were finally accepted for development. These were worked up the same as if they had been for individual clients. Sketches and floor plans were then issued in a comprehensive and attractive book which was sold. Persons interested could then make their choice and could order a complete set of working plans in blue print, which included all finish details, the bills of material required, specifications, and a set of legal forms required to make the building transaction complete. The cost of this service varies from twenty to forty dollars and represents less than one-tenth of the charge normally made by architects for their complete service in building a small home of the same type.

The electrical industry made its debut in the arrangements by giving its approval and support to the movement, providing that certain electrical standards were established—one of which was that each room must have at least one convenience outlet, and all finished rooms, hallways, porches, etc., should have a flush type wall switch to control the lights. This was established as an "irreducible minimum" as provisions were made that the larger houses should have even more complete installations as a minimum.

The first plans completed—but before they were printed—were turned over to the Electrical League for corrections, suggestions or revamping and at that time it was noticed that the draftsmen working on the plans economized in the wiring designs—with a result that education had to be meted out to them, in accordance with the minimum standards established. However, the general development was such that but few suggestions were needed.

As a result of this arrangement, the result in brief has been that of doubling the wiring installation as ordinarily installed in similar houses.

Through the book, of which nearly two thousand have already been sold, two additional ideas of benefit to the electrical industry were developed. The first was the inclusion of a chapter prepared by the Electrical League on "Electricity in the Home," which explained the function of electricity in the home and stressed the subjects of illumination and convenience outlets. The second feature was the establishment in the display advertising pages of the book, an electrical section wherein the advertisers were tied-in to the "better service" idea.

The Electrical Cooperative League in its space gave reference to the electrical home and the gratuitous service it renders in advising on electrical problems. As a result, a number of the plans procured by prospective builders have already been turned over to the League for further development and the wiring plans were made even more comprehensive—in one case approximating in proportion the complete installation made in the first electrical home recently exhibited in Denver.

The Society for Electrical Development, Inc., is issuing a sales letter service to its members. The following letter shows the effectiveness of the material which the organization is sending out:

Dear Mrs. (name):

You need not confine your summer vacation to two weeks only—if you would call upon household electrical appliances to provide you with all-year-round ease.

It costs anywhere from $150 to $250 for an ordinary two weeks' family vacation at a summer hotel or a month's stay at a cottage "by the sea."

The same money expended for electric time-saving appliances in the home, either as an initial investment or adding to the appliances you already have, will extend the summer vacation over the whole year.

An electric clothes or dish washer, for instance, will certainly add to your time off duty each day and continuously provide more time for much needed rest.

Let us help you plan a permanent vacation with electrical appliances. Partial payment plan if you desire.

The enclosed folder will assist you in learning how electrical appliances could be advantageously used to make your summer vacation the start of the permanent one.

Cooperatively yours,
(Name and address).

Activities of the West

A Business Man's Department Devoted to Events and Developments in Western Industrial Centers—Including News of Interest to Readers in Public Utility, Industrial and Trade Fields

Forest Fires Under Control

Northwest Needs Rain to Check Menace Dry Year Blamed for Losses

Favored by cool weather and continued westerly winds, the forest fire fighters in the forests of western Washington during the middle of July were holding the fire menace in check, but until rain falls the fire danger which has harassed this section for the past eight weeks, will not be removed.

According to G. C. Joy, supervisor for the Washington Forest Fire Association, on July 15 the worst forest fires at that time were in western Lewis county, and conditions in Snohomish, Skagit, Pierce and King counties were much improved. On that date, it was stated that one-half inch of rain would be worth millions of dollars to the Northwest, as that amount of rain would stop all fires and prevent further fire menace for 60 days. George N. Salisbury, weather bureau observer at Seattle, is authority for the statement that this is the driest year since 1910 in Washington. The Puget Sound section has had practically no rain since May 26. Throughout June, there was only three-hundredths of an inch, scarcely enough to lay the dust.

General Electric Co. Establishes Merchandising Department

The General Electric Company has announced the formation of a Merchandise Department, which will have charge of products that are handled through re-sale channels.

The organization will consist of three divisions: administrative, supply sales and motor sales, and will be headed by George P. Baldwin as general merchandise manager, and H. C. Houck as assistant general merchandise manager.

The administrative department will be divided into sales promotion, research, advertising, publication and supply house sections.

The supply sales division will be in charge of a sales manager and an assistant sales manager, with section managers covering fans, wiring devices, conduit products, rectifiers, wire, transformer products, and miscellaneous supply products.

The motor sales division will cover the small motor field.

There will also be a district merchandising organization in each district office of the company.

The merchandise department will take over the work pertaining to the lines of re-sale products formerly handled by other departments, the latter continuing to have charge of those products that are not sold through distributors or dealers.

The new organization will begin to function about August 1, and it will largely be centralized at the Bridgeport Works of the company, although Mr. Baldwin will have his office in New York. Announcement of the complete personnel of the department will be made soon.

Colorado River Hearing Is Postponed to Aug. 28

The hearing at Santa Fe, New Mexico, before the Colorado River Commission which was to be held August 1, has been postponed to August 28. The postponement was made necessary because the presence of Secretary of Commerce Hoover was required in Washington in connection with the strike situation.

Seattle Company Takes Over Two Northwest Power Companies

Two electric light and power properties and two water systems, the former located at Montesano and Elma and the latter at South Bend and Tenino, Washington, formerly operated by the Northwest Electric Light and Power Company, have been taken over by the Washington Coast Utilities Corporation of Seattle, through receivership proceedings, and will hereafter be operated by the Seattle corporation as subsidiary companies.

The Washington Coast Utilities Company, of Seattle, operates light and power and water systems in several small towns in the Puget Sound country and also in the Wenatchee district in central Washington. The largest holdings of the Utilities company are located in Port Townsend, Marysville, Arlington and Wenatchee.

In announcing the acquirement of the properties at Montesano, Elma, South Bend and Tenino, an official of the company stated that work will be started immediately in making physical connections between the Montesano and Elma plants and the steam-electric plants of the Grays Harbor Railway and Light Company at Aberdeen. This work will involve the construction of 12 miles of high power transmission lines between the Grays Harbor metropolis and the two towns named, and also the reconstruction and re-arrangement of distribution lines in the towns of Elma and Montesano. Six miles of the transmission lines will be built by the Grays Harbor Railway and Light Company and the remainder by the Washington Coast Utilities Company. The Washington Coast company will also build a substation at Montesano.

Refinancing Plan Announced

Southern California Edison Co. Will Re-classify Portion of Stock

The Southern California Edison Company has been given permission by the California Railroad Commission to reclassify its stock and to issue and sell $9,500,000 of 7 per cent cumulative non-participating preferred stock to retire outstanding second preferred stock and for development work. According to the plans of the company, outstanding first preferred stock amounting to $4,000,000 will be designated as original preferred. Second preferred amounting to $12,020,900 is to be retired and the common stock is to be reduced from $83,500,000 to $60,000,000. A meeting of the stockholders called for August 1 is expected to ratify these changes. The company's authorized capitalization of $100,000,000 will then consist of $4,000,000 of original preferred, $36,000,000 of 7 per cent cumulative non-participating preferred and $60,000,000 of common stock.

The $12.020,900 of the second preferred stock is owned by H. E. Huntington who has agreed to sell the stock to the company for $9,453,322, or at a price of approximately $78 a share. Mr. Huntington, according to the showing made at the hearing, has agreed to take $4,000,000 of the new preferred stock and will receive the balance of approximately five and one-half million dollars in cash. This amount the company plans to obtain from the proceeds of the sale of common stock on hand and being received in installments and also from the sale of some $2,000,000 of the new 7 per cent preferred.

The company's estimates of its construction expenditures for the seven-year period beginning with the present year were given to the Commission in the following tabulation:

1922	$27,344,300
1923	18,055,800
1924	13,829,000
1925	22,290,000
1926	16,200,000
1927	15,975,000
1928	11,800,000

A. E. Carlton, Colorado capitalist who, with his associates, are the principal owners of the Grand Junction Electric, Gas and Manufacturing Company, and the Grand River Valley Railroad Company, has purchased the Palisade Light and Power Company from Hendrie and Bolthoff of Denvr. It is announced that there will be no change in the managment or equipment of the Palisade plant at this time. The deal is understood to involve a heavy investment, as the Palisade plant is comparatively new and up to date.

Events in Washington of Interest to Western Men

A Survey of Recent Developments in the Nation's Capital by Paul Wooton, Special Correspondent of the Journal of Electricity and Western Industry

All other events in Washington during the past two weeks have been overshadowed by the coal and railroad strike developments. The President asked representatives of the coal operators and of the coal miners to sit around the table in an effort to arrive at an agreement which would permit of the resumption of coal production. No agreement was reached and it was apparent from the beginning of the conference that it could result in nothing but a deadlock. Then the President proposed the setting up of an arbitration commission. The plan was rejected by the miners, but was accepted, with reservations, by the anthracite operators, and unconditionally by all of the operators' associations except three.

The failure to secure unanimous acceptance of his arbitration proposal led the President to urge the operators to return to their mines and attempt to produce coal. It also was made clear at the White House that this invitation to resume coal production was extended to the mine workers as well. The President then telegraphed the governors of the twenty-eight coal producing states urging that they afford every protection to those attempting to produce coal. As this is written, the mine operators have selected certain propitiously situated properties and are preparing to undertake their operation. If it should prove that they can not produce coal, the administration is understood to be prepared to take another step, the nature of which has not been announced.

It is regarded as having been very unfortunate that the Railway Labor Board should have handed down its shopcraft decision just as the coal strike was reaching its crisis. This fact has complicated greatly the task now before the administration, of protecting the public against a fuel shortage. There is evidence of collusion between the two bodies of strikers, since the efforts of the shopcraft strikers apparently are being concentrated on important junction points through which coal must move from the non-union fields.

Dye Embargo

The report of the sub-committee, of which Senator Shortridge of California was chairman, which investigated the charges brought against the domestic dye industry, will have an important bearing on the final vote on the dye embargo. The Senate, on July 15, declined by a vote of 32 to 38 to accept the proposal of the Finance Committee to extend the embargo for one year and to empower the President to extend it for one year more, if he should deem it advisable. This vote was taken in Committee of the Whole. Senator Frelinghuysen, of New Jersey, who led the fight for the dye industry, reserved a separate vote on the matter when the bill is considered by the Senate proper.

Senator Shortridge, since the vote was taken, has indicated that his committee will report that there are no evidences of there being a monopoly among domestic dye manufacturers and that his exhaustive investigation of the whole situation failed to discover any irregularities in the conduct of this industry. This is expected to have an important influence when the roll is called again on the dye embargo.

Chemical Foundation

It is admitted generally that the vote on the dye embargo was influenced by the action taken by the administration against the Chemical Foundation. Since the first charges were made it has become increasingly apparent that there are two sides to that case and that it is not related to the embargo proposal. It is generally conceded that the amounts paid for the German patents were relatively low as compared with the real value of these rights. On the other hand, no evidence has been produced to indicate that any other than the American people as a whole have received benefits from the transaction. While the chemical industry is vitally concerned in each of these cases, sight is not being lost of the fact that one is for judicial determination, likely to be a process of years; whereas the other is legislative, the effects of which will be felt immediately.

Potash Bounty

Recommendation by the Finance Committee of the Senate to substitute a bounty for the duty proposed for potash has led to wide discussion of the application of the bounty policy for the encouragement of domestic production of commodities, of which the country's supply is limited. The application of this policy to such materials as manganese and tungsten also is being discussed.

Depreciation Legislation

In a letter to the Secretary of War, L. W. Wallace, the executive secretary of the Federated American Engineering Societies, asks what has happened to the appeal of the electrical industries against the depreciation regulation drafted for use in connection with the Water Power Act. Mr. Wallace's letter reads as follows:

"For many months, there has been pending before your Commission an appeal from the electrical industries against the depreciation regulation which it was proposed to enforce in the administration of the Water Power Act.

"Many of the engineers who compose this organization are particularly anxious to see our water power resources utilized as extensively and as promptly as is possible, and some of them have requested that I secure an authoritative statement as to the status of the matter. There is a feeling that the uncertainty in regard to depreciation is tending to retard this development.

"May I inquire what are the prospects for action on the depreciation regulation? It should be very helpful to our members if we could have the advantage of any personal views on the subject which you may care to express."

War Minerals Relief

A far-reaching opinion has been handed down by the Secretary of the Interior in the claim of the Santa Margarita Chrome Co. He holds that claimants should be reimbursed for losses on one operation, even if the same person made profits on a similar, but separate, operation. All action taken heretofore by the War Minerals Relief Commission has been placed on a policy of net losses only. If a claimant lost in one chrome operation, for instance, but profited in another, he was awarded only his net loss. This ruling is expected to result in additional awards in a large number of cases. In view of the ruling, an award of $18,720.27 was recommended. Among the other recent awards is one of $10,777.69 for John J. Everharty, of Los Angeles.

Silver Export Association

Preliminary steps are being taken looking to the organization of a silver export association. Before the Pittman Act expires it is hoped to have such an association ready to function so as to permit the orderly marketing of the country's silver production. Under the Pittman Act, the 209,000,000 fine ounces of silver sold by the government during the war to Great Britain is to be replaced at $1 an ounce, the price which Great Britain paid for the Treasury's reserve of silver dollars. If American production of silver is dumped on the market immediately after the government reserve is replaced, a demoralization of the price is feared. If the export association can be formed, it will make it possible, it is believed, to cope more successfully with the situation.

New Milling & Elevator Company at Casper, Wyoming

Plans have been completed for the establishment of a milling and elevator company at Casper, Wyoming, with a daily output of 100 barrels. The company is to be capitalized for $100,000 and will be in operation by August 1. Working capital for the erection of the plant has already been provided.

Hard wheat raised on dry farms in the vicinity of Casper are expected to keep the mill well suppiled. The company plans to establish elevators along the lines of two railroads centering here which traverse rich farming territory. An alfalfa mill for making feed for livestock and other by-products is expected to be one of the developments of the company in the near future.

Work Scheduled to be Resumed on Boise-Payette Irrigation

There are very favorable prospects that work willl be resumed this summer on the Hillcrest extension to the Boise-Payette project, according to a telegram from Congressman Addison T. Smith in reply to requests that the Idaho delegation do all in its power to obtain funds for the work.

This project covers about 15,000 acres of land, situated on the bench south of Boise, and almost touching the city limits. The lands are said to be the most fertile of any in the Snake river bottom.

Water is to be pumped to an elevation of 80 feet above the present main south side canal. The power for pumping the water is to be obtained from the government power plant now constructed at diversion dam, and the lands served by the canal extend up to the point of diversion. Losses, therefore, due to evaporation and seepage will be small.

Plans Maturing for Rocky Mountain Exposition

All Four Branches of Electrical Industry Planning to Make Show Epochal in History of Western Development

The Rocky Mountain Electrical Exposition, scheduled for October 2 to 14 at Salt Lake City, Utah, will be an epochal step in the development of western industry. It is to be vastly more than a mere temporary stimulus of business; its larger purpose is to permanently widen the scope of the electrical market by bringing into logical contact and working relation the manufacturer, the central station, the jobber and the contractor-dealer. And back of that will be the infinite expansion of service to the populace of the intermountain region.

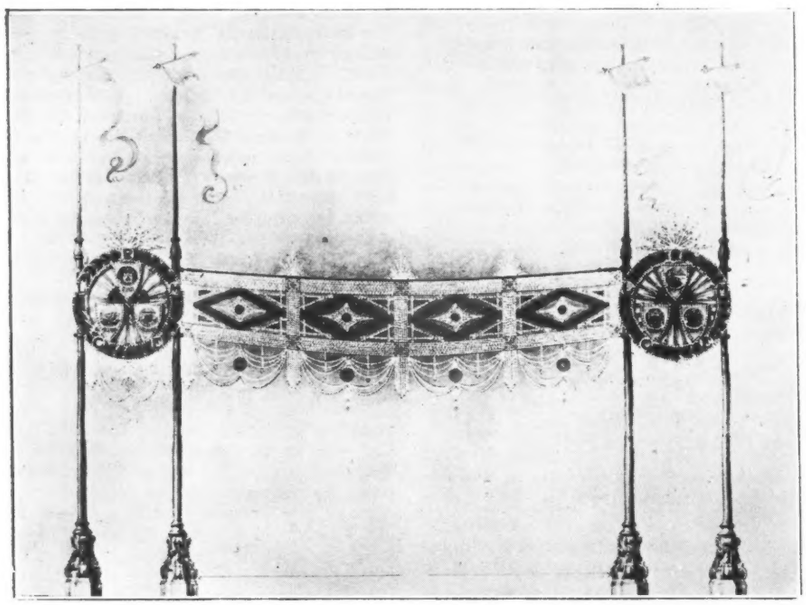
The exposition will be, first and last, educational. Display of actual electrical products and graphic demonstration of their uses will be the method of this great popular institute. The throngs of visitors will have unfolded to them in vivid exhibition the undreamed-of utility and blessing of electric light, heat and power. That this is preeminently an electrical era will be graphically driven home to tens of thousands.

The attendance at the exposition promises to be more than satisfactory. Coming at the time of the Utah State Fair and the Mormon Semi-Annual Conference, it will have the patronage of substantial folk who hail from every quarter of the Mountain country. A total attendance of 200,000 people is not an unconservative estimate. The exposition will add to these two drawing cards, powerful attractions of its own. An advertising campaign calculated to bring unprecedented throngs of visitors to Salt Lake City is being sponsored by the Rocky Mountain Electrical Cooperative League.

The great Regional Arch and electrical display, designed by W. D'A. Ryan, will be fully completed by the opening of the exposition. Plans submitted by the famous illuminating engineer foreshadow a spectacle of surpassing novelty and grandeur.

At the end of the arch will be a circular emblem, 12 feet in diameter, bearing the coat of arms of the six states of the Rocky Mountain group—Utah, Nevada, Colorado, Montana, Idaho and Wyoming.

A score of 18-inch searchlights playing in muliple colors on this studded arch will produce a spectacle of brilliance that will eclipse any electrical display ever seen in the Rocky Mountain region. Mr. Ryan estimates that the flaming shafts of light will be visible anywhere within a radius of 50 miles. The arch and its appurtenances will have a total valuation of upwards of $100,000.



The suggested design for an archway of jewels for the Rocky Mountain Electrical Exposition which is to be held in Salt Lake City, October 2 to 14. D'Arcy Ryan, director of the illuminating engineering laboratory of the General Electric Company, is in charge of the lighting effects. The exposition is being sponsored by the Rocky Mountain Electrical Cooperative League.

Salt Lake City was chosen as the place for the exposition because of its strategic location in the Intermountain territory. Besides being at the heart of a vast and rich jobbing area, it is at the center of a region of potential hydroelectric development that exceeds any of similar size in all the world.

The prospect for development is almost limitless . Engineers have estimated that 40,000,000 horsepower is the ultimate goal, with 2,000,000 horsepower already available for use.

The West, even at the present time, uses more electricity, gets it cheaper and has a greater available supply than any other section of the country. Fifty-four kilowatt-hours is the average annual per capita consumption, while eight kilowatt-hours represents the national average. Hence, it seems altogether timely and fitting to promote an electrical exposition on the large scale in this great industrial region.

The exposition will be held in Bonneville Park Pavilion, a spacious auditorium that is easily accessible to visitors in Salt Lake City. The floor plan has been worked out in harmony with principles of effective and correct display. Every exhibit will be accessible to a high degree, having frontage on one of the aisles. One section of the auditorium has been reserved for the display of feature exhibits.

The exhibits will be arranged in the following classifications: radio, lighting, heating, signaling, railway, farm lighting, automotive, industrial, utility, baking and cooking, wiring supplies, fixtures, therapeutics, telephone, telegraph, novelties and toys, educational and spectacular effects.

The response of the electrical manufacturing industry has been gratifying to the officials of the League. The success of the exposition is already assured so far as exhibits are concerned. Reservations are being taken at a rate that indicates universal interest in the show.

New Power Company Authorized to Operate in Idaho

An order has been issued by the public utilities commission of Idaho giving the Murtaugh Light and Power Company permission to serve with electrical energy certain territory in Twin Falls and Cassia counties. The order gives the company permission to construct such transmission lines and distribution lines as may be needed. No permission is given, however, to construct a power plant, as the company contemplates purchasing electricity from the Idaho Power Company.

The commission's order defines exactly what territory may be served by the company, and no service may be sold outside the boundary lines defined by the commission. This was done because the territory to be served by the company is distinctly Idaho Power Company territory, but that company has waived its right to serve the district, and the commission gave the Murtaugh company permission to serve residents of the territory involved.

Pacific Gas & Electric Co. Will Improve Sacramento Property

Extensive improvements to the Sacramento gas plant, involving an expenditure of over $100,000, are now under way by the Pacific Gas and Electric Company and will be rushed to completion.

The gas generating equipment is to be rebuilt and improved and will result in increasing the output capacity from 100,000 to 125,000 cubic feet per hour. Two new and modern Sterling boilers of 250 horsepower capacity each are to be installed and also a steam driven gas compressor capable of delivering 130,000 cubic feet per hour to the high pressure mains.

Company engineers announce that it is believed that the new installation will provide for all requirements for many years. The improvements are made necessary because of the recent installation of a high pressure pipe line supplying Davis and Woodland from the Sacramento plant and partly because of the rapid growth of the city of Sacramento within the last few years.

California Railroad Commission Makes Important Ruling

Establishing the principle that a certificate of public convenience and necessity granted a utility may be modified to meet changed conditions, the California Railroad Commission has ordered a division of territory between the Vallejo Electric Light and Power Company and the Great Western Power Company of California in Vallejo and vicinity. The matter came before the commission upon the complaint of the Vallejo company charging the Great Western with invasion of its territory.

Both utilities have been granted certificates authorizing them to serve electricity in the same territory. The question involved, the commission stated, was whether the commission has power to prohibit wasteful and unnecessary competition or duplication of lines within such district by limiting the rights of the company under their certificates. Admitting that the limitation of the rights of either party to make extensions will result in a virtual revocation of the certificates as to part of the territory covered by them, the commission held that under the California Public Utilities Act it has power to modify a previous order or decision at any time.

Regarding this power the commission in the decision written by Commissioner H. Stanley Benedict said:

> Furthermore, a certificate of public convenience and necessity is not a right which passes beyond all regulation or control. While the Commission could not arbitrarily revoke a certificate, especially if extensive investments had been made pursuant to it, we are of the opinion that the Commission may make reasonable regulations governing, and if necessary in the public interest, limiting its use."

Under the terms of the order the Great Western company is directed to make no further extensions of its lines and to construct no more distribution lines in the general territory now covered by the lines of the Vallejo company. The Great Western company is permitted to continue to serve Highway Home Additions and such other consumers as it now has or can serve from its existing distribution lines. The Great Western is further permitted to serve any applicant to whom service has been refused or shall hereafter be refused by the Vallejo company. The certificates, previously granted to these utilities, were modified in accordance with the findings of the present decision. Discussing the general question of competition the commission said:

> The question whether competition or duplication of lines in a given territory should be forbidden by the Commission is one of public policy to be determined from the particular facts in each case. Competition under some conditions is not, of itself, harmful and has in some cases been permitted by the Commission. In the present case, however, we can see no good purpose to be served by permitting the two companies to extend their lines indiscriminately in the area in question. That area is contiguous to the city of Vallejo. Much of it is built up now. The natural growth will be, as it has been, outward from the city. Whether the actual boundary line of the city is extended or not, it is not unlikely that much, if not all, of the territory in question, will be actually city territory. We think that duplication of lines in territory of this character and under conditions here existing should not be permitted.

Architect's conception of the new factory which is being constructed in Los Angeles for the U. S. Electrical Manufacturing Company, manufacturers of U. S. motors.

U.S. Motors Will Have New Home in Los Angeles

Breaking ground on May 20 for what is declared will be the largest electrical factory west of the Mississippi River, the Austin Company is rushing the erection of a new factory for the U. S. Electrical Manufacturing Company on Slauson Avenue, Los Angeles. The factory is situated on a tract of land five and one-quarter acres in size and will be one of the most modern industrial units in southern California. The builders are under contract to complete the factory by early fall and the well-known electrical concern is making preparations to equip its new plant with every approved facility. It is stated that the plant and equipment will represent an investment of approximately $500,000.

The building for the first unit will occupy two acres of space and will be one of the largest daylight factories in the West. The entire sides will be of glass and the building will be constructed of steel and ornamental brick.

The first unit, which will have a frontage of 150 feet, will be two stories in height and will give a space of 4,000 sq. ft. for administration, engineering and drafting accommodations. In the factory building proper, special runways for electrical cranes and monorails are to be installed and the production machinery will comprise 75 individual motor driven machine tools, not only including the equipment at the company's present plant at Third and Central Avenues but many other machines that are being built for special purposes.

There will be special departments for finishing the motor frames, heat treating the materials and painting and for the accommodation of electrical testing equipment. An entire acre of space has been set aside for recreational uses of employes and there will be rest cottages, an athletic field and garages for employes' automobiles.

A distinctive feature will be the system of lighting. A system of illumination is to be installed which will give the factory daytime lighting at night, making the main building one of the most conspicuous edifices in the southern part of the city.

Ample ground has been purchased to provide expansion for several years to come and the new plant is designed to immediately double the company's present production of electric motors.

The co-managers of the company, who are also the owners, H. G. Steele of Pasadena and Carl E. Johnson of Los Angeles, have been responsible for the development of the company and have already brought its annual turnover to approximately the million-dollar mark in the present plant.

General Electric Company Will Build Plant in Oakland

Dr. Thomas Addison, Pacific Coast manager for the General Electric Company, announces the immediate erection of a second plant at Oakland, part of which will be devoted to increased facilities for the manufacture of switchboards and the remainder occupied by motor and instrument laboratories, service shops and offices.

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Plans Maturing for Rocky Mountain Exposition

All Four Branches of Electrical Industry Planning to Make Show Epochal in History of Western Development

The Rocky Mountain Electrical Exposition, scheduled for October 2 to 14 at Salt Lake City, Utah, will be an epochal step in the development of western industry. It is to be vastly more than a mere temporary stimulus of business; its larger purpose is to permanently widen the scope of the electrical market by bringing into logical contact and working relation the manufacturer, the central station, the jobber and the contractor-dealer. And back of that will be the infinite expansion of service to the populace of the intermountain region.

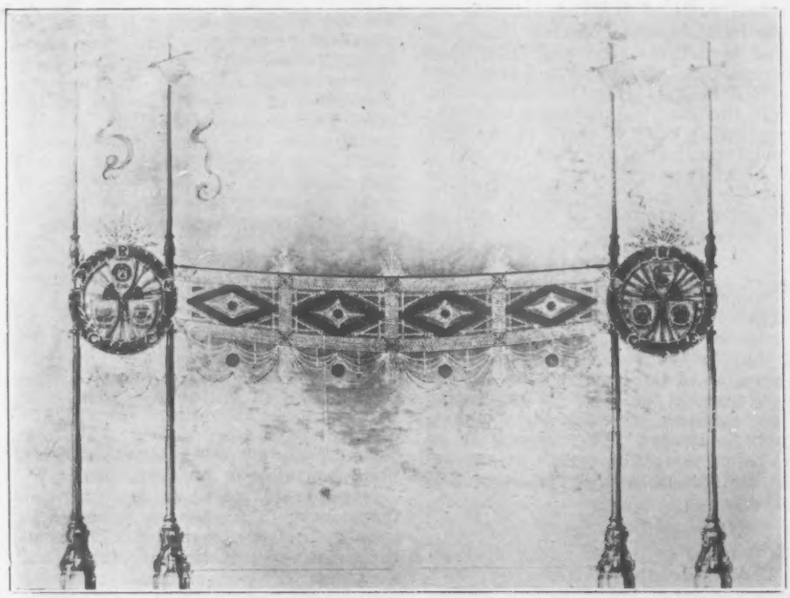
The exposition will be, first and last, educational. Display of actual electrical products and graphic demonstration of their uses will be the method of this great popular institute. The throngs of visitors will have unfolded to them in vivid exhibition the undreamed-of utility and blessing of electric light, heat and power. That this is preeminently an electrical era will be graphically driven home to tens of thousands.

The attendance at the exposition promises to be more than satisfactory. Coming at the time of the Utah State Fair and the Mormon Semi-Annual Conference, it will have the patronage of substantial folk who hail from every quarter of the Mountain country. A total attendance of 200,000 people is not an unconservative estimate. The exposition will add to these two drawing cards, powerful attractions of its own. An advertising campaign calculated to bring unprecedented throngs of visitors to Salt Lake City is being sponsored by the Rocky Mountain Electrical Cooperative League.

The great Regional Arch and electrical display, designed by W. D'A. Ryan, will be fully completed by the opening of the exposition. Plans submitted by the famous illuminating engineer foreshadow a spectacle of surpassing novelty and grandeur.

At the end of the arch will be a circular emblem, 12 feet in diameter, bearing the coat of arms of the six states of the Rocky Mountain group—Utah, Nevada, Colorado, Montana, Idaho and Wyoming.

A score of 18-inch searchlights playing in muliple colors on this studded arch will produce a spectacle of brilliance that will eclipse any electrical display ever seen in the Rocky Mountain region. Mr. Ryan estimates that the flaming shafts of light will be visible anywhere within a radius of 50 miles. The arch and its appurtenances will have a total valuation of upwards of $100,000.



The suggested design for an archway of jewels for the Rocky Mountain Electrical Exposition which is to be held in Salt Lake City, October 2 to 14. D'Arcy Ryan, director of the illuminating engineering laboratory of the General Electric Company, is in charge of the lighting effects. The exposition is being sponsored by the Rocky Mountain Electrical Cooperative League.

Salt Lake City was chosen as the place for the exposition because of its strategic location in the Intermountain territory. Besides being at the heart of a vast and rich jobbing area, it is at the center of a region of potential hydroelectric development that exceeds any of similar size in all the world.

The prospect for development is almost limitless . Engineers have estimated that 40,000,000 horsepower is the ultimate goal, with 2,000,000 horsepower already available for use.

The West, even at the present time, uses more electricity, gets it cheaper and has a greater available supply than any other section of the country. Fifty-four kilowatt-hours is the average annual per capita consumption, while eight kilowatt-hours represents the national average. Hence, it seems altogether timely and fitting to promote an electrical exposition on the large scale in this great industrial region.

The exposition will be held in Bonneville Park Pavilion, a spacious auditorium that is easily accessible to visitors in Salt Lake City. The floor plan has been worked out in harmony with principles of effective and correct display. Every exhibit will be accessible to a high degree, having frontage on one of the aisles. One section of the auditorium has been reserved for the display of feature exhibits.

The exhibits will be arranged in the following classifications: radio, lighting, heating, signaling, railway, farm lighting, automotive, industrial, utility, baking and cooking, wiring supplies, fixtures, therapeutics, telephone, telegraph, novelties and toys, educational and spectacular effects.

The response of the electrical manufacturing industry has been gratifying to the officials of the League. The success of the exposition is already assured so far as exhibits are concerned. Reservations are being taken at a rate that indicates universal interest in the show.

New Power Company Authorized to Operate in Idaho

An order has been issued by the public utilities commission of Idaho giving the Murtaugh Light and Power Company permission to serve with electrical energy certain territory in Twin Falls and Cassia counties. The order gives the company permission to construct such transmission lines and distribution lines as may be needed. No permission is given, however, to construct a power plant, as the company contemplates purchasing electricity from the Idaho Power Company.

The commission's order defines exactly what territory may be served by the company, and no service may be sold outside the boundary lines defined by the commission. This was done because the territory to be served by the company is distinctly Idaho Power Company territory, but that company has waived its right to serve the district, and the commission gave the Murtaugh company permission to serve residents of the territory involved.

Pacific Gas & Electric Co. Will Improve Sacramento Property

Extensive improvements to the Sacramento gas plant, involving an expenditure of over $100,000, are now under way by the Pacific Gas and Electric Company and will be rushed to completion.

The gas generating equipment is to be rebuilt and improved and will result in increasing the output capacity from 100,000 to 125,000 cubic feet per hour. Two new and modern Sterling boilers of 250 horsepower capacity each are to be installed and also a steam driven gas compressor capable of delivering 130,000 cubic feet per hour to the high pressure mains.

Company engineers announce that it is believed that the new installation will provide for all requirements for many years. The improvements are made necessary because of the recent installation of a high pressure pipe line supplying Davis and Woodland from the Sacramento plant and partly because of the rapid growth of the city of Sacramento within the last few years.

California Railroad Commission Makes Important Ruling

Establishing the principle that a certificate of public convenience and necessity granted a utility may be modified to meet changed conditions, the California Railroad Commission has ordered a division of territory between the Vallejo Electric Light and Power Company and the Great Western Power Company of California in Vallejo and vicinity. The matter came before the commission upon the complaint of the Vallejo company charging the Great Western with invasion of its territory.

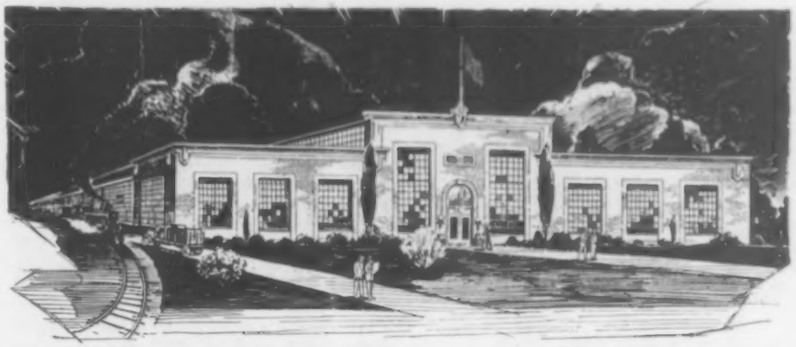
Both utilities have been granted certificates authorizing them to serve electricity in the same territory. The question involved, the commission stated, was whether the commission has power to prohibit wasteful and unnecessary competition or duplication of lines within such district by limiting the rights of the company under their certificates. Admitting that the limitation of the rights of either party to make extensions will result in a virtual revocation of the certificates as to part of the territory covered by them, the commission held that under the California Public Utilities Act it has power to modify a previous order or decision at any time.

Regarding this power the commission in the decision written by Commissioner H. Stanley Benedict said:

> Furthermore, a certificate of public convenience and necessity is not a right which passes beyond all regulation or control. While the Commission could not arbitrarily revoke a certificate, especially if extensive investments had been made pursuant to it, we are of the opinion that the Commission may make reasonable regulations governing, and if necessary in the public interest, limiting its use."

Under the terms of the order the Great Western company is directed to make no further extensions of its lines and to construct no more distribution lines in the general territory now covered by the lines of the Vallejo company. The Great Western company is permitted to continue to serve Highway Home Additions and such other consumers as it now has or can serve from its existing distribution lines. The Great Western is further permitted to serve any applicant to whom service has been refused or shall hereafter be refused by the Vallejo company. The certificates, previously granted to these utilities, were modified in accordance with the findings of the present decision. Discussing the general question of competition the commission said:

> The question whether competition or duplication of lines in a given territory should be forbidden by the Commission is one of public policy to be determined from the particular facts in each case. Competition under some conditions is not, of itself, harmful and has in some cases been permitted by the Commission. In the present case, however, we can see no good purpose to be served by permitting the two companies to extend their lines indiscriminately in the area in question. That area is contiguous to the city of Vallejo. Much of it is built up now. The natural growth will be, as it has been, outward from the city. Whether the actual boundary line of the city is extended or not, it is not unlikely that much, if not all, of the territory in question, will be actually city territory. We think that duplication of lines in territory of this character and under conditions here existing should not be permitted.



Architect's conception of the new factory which is being constructed in Los Angeles for the U. S. Electrical Manufacturing Company, manufacturers of U. S. motors.

U.S. Motors Will Have New Home in Los Angeles

Breaking ground on May 20 for what is declared will be the largest electrical factory west of the Mississippi River, the Austin Company is rushing the erection of a new factory for the U. S. Electrical Manufacturing Company on Slauson Avenue, Los Angeles. The factory is situated on a tract of land five and one-quarter acres in size and will be one of the most modern industrial units in southern California. The builders are under contract to complete the factory by early fall and the well-known electrical concern is making preparations to equip its new plant with every approved facility. It is stated that the plant and equipment will represent an investment of approximately $500,000.

The building for the first unit will occupy two acres of space and will be one of the largest daylight factories in the West. The entire sides will be of glass and the building will be constructed of steel and ornamental brick.

The first unit, which will have a frontage of 150 feet, will be two stories in height and will give a space of 4,000 sq. ft. for administration, engineering and drafting accommodations. In the factory building proper, special runways for electrical cranes and monorails are to be installed and the production machinery will comprise 75 individual motor driven machine tools, not only including the equipment at the company's present plant at Third and Central Avenues but many other machines that are being built for special purposes.

There will be special departments for finishing the motor frames, heat treating the materials and painting and for the accommodation of electrical testing equipment. An entire acre of space has been set aside for recreational uses of employes and there will be rest cottages, an athletic field and garages for employes' automobiles.

A distinctive feature will be the system of lighting. A system of illumination is to be installed which will give the factory daytime lighting at night, making the main building one of the most conspicuous edifices in the southern part of the city.

Ample ground has been purchased to provide expansion for several years to come and the new plant is designed to immediately double the company's present production of electric motors.

The co-managers of the company, who are also the owners, H. G. Steele of Pasadena and Carl E. Johnson of Los Angeles, have been responsible for the development of the company and have already brought its annual turnover to approximately the million-dollar mark in the present plant.

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Conditions in Twelfth Federal Reserve District

Current Summary Shows Increasing Business Activity Together With Slightly Advancing Prices for Principal Products

The monthly report on business and agricultural conditions issued by John Perrin, chairman of the board and Federal Reserve Agent of the Federal Reserve Bank of San Francisco, indicates several tendencies of the past month which will have a salutary effect on business in general. The Twelfth Federal Reserve District includes the states of California, Washington, Oregon, Idaho, Utah, Nevada and Arizona. A summary of the report follows:

Indications of increasing business activity in this district, which first appeared during April and May, have multiplied during June. Prices of the principal products of the district have either remained firm or advanced slightly, reflecting similar tendencies in national prices. The United States Bureau of Labor's wholesale price index which increased 3½ per cent during May, advanced 1.35 per cent during June and is now 8.7 per cent above the low point of January, 1922. Charges to individual accounts of depositors in banks of the twenty principal cities were 5.6 per cent greater in amount than in June, 1921. Sales of thirty-two representative department stores for the second consecutive month were greater in dollar value than they were in the same month of 1921, the increase of June, 1922, over June, 1921, being 3 per cent. As average retail prices have changed but little during this period, the physical volume of merchandise now moving at retail is evidently increasing. At wholesale, also, the same condition prevails. Of the ten reporting lines of trade, nine advise that the dollar values of their sales for June, 1922, exceeded those of June, 1921. Employment has increased throughout the district so generally that involuntary unemployment has practically disappeared. A wage increase in the lumber industry of approximately 10 per cent occurred during the month. It is the first increase since the business recession began in 1920. With the exception of San Francisco, the principal manufacturing cities of the district report steady increases in the number of men employed each month, and a substantial increase of manufacturing activity as compared with June, 1921. An unfavorable aspect of the business situation is the increasing number of business failures reported.

Productive activity also continues to increase. Lumber and log production during June exceeded the figures of the previous months of the year, and were 50 per cent and 20 per cent respectively in excess of output in June, 1921. Of the seventeen copper mines of the district, eight are now operating, compared with two a year ago, and their May, 1922, output of 23,613,000 pounds of copper was nearly 1,000,000 pounds larger than the April, 1922, output. Petroleum production during June was less than 1 per cent smaller than the record output of the preceding month, and stocks of crude oil continued to increase to 43,700,000 barrels, being on June 30, 46 per cent in excess of stocks held a year ago. On July 15 a reduction of approximately 25 cents per barrel in crude oil prices was announced, the first change since the reduction of 25 cents per barrel in August, 1921. Gasoline stocks on May 31, 1922, had declined 14.3 per cent during the month, and were 18.7 per cent less than they were a year ago, on May 31, 1921. Building activity during June was exceeded only during April.

The grain crops of the district have suffered on account of unusually dry weather during June, and the total wheat yield is now estimated at 103,211,000 bushels compared with a final yield of 122,000,000 bushels during 1921. The hot weather has been unfavorable also to the growth of forage crops and pastures in the livestock areas of the district, but the condition of the stock in most sections is still reported to be good. Warm weather, which damaged the grain crops and pastures of the district, was beneficial for crops of ripening fruit. The yields of peaches and pears generally, and of the other commercial fruits in California, will be almost without exception larger than they were last year. Shipments of green fruits to eastern markets are proceeding normally. Fruit canners in California are planning a 1922 pack which will be about 15 to 20 per cent larger than the pack of 8,500,000 cases in 1921 with opening prices, announced early in July, slightly higher than the prices quoted for that pack.

Notwithstanding the increasing activity of production and business, bank credit generally continues to be abundant and cheaper. Prevailing interest rates charged by banks in the larger centers are 5½ to 6 per cent, and in the agricultural regions decreased slightly during June. Effective July 8, the rediscount rate of this bank was reduced from 4½ to 4 per cent for all classes of paper. A temporary increase in borrowings by the city banks from the reserve bank attending the closing of the fiscal year on June 30 was almost cancelled by July 12, total rediscounts of this bank on that date being $42,000,000 compared with a total of $40,000,000 on June 14. Despite the increase in agricultural activity at this season throughout the district, repayments by country banks of their rediscounts with the Reserve Bank in general continued to exceed their new borrowings.

A destructive fire at McGill, Nevada on July 9, destroyed the concentrating plant of the Nevada Consolidated Copper plant and much of the timber of the adjacent mountains. A strong wind from the valley was all that saved the other buildings of the town.

The rolling mills at Yawata, Japan, opened and operated by the government, will be completely electrified as the result of a series of exhaustive experiments. It is estimated that the new equipment necessary to transform the plant will cost 15,000,000 yen or $7,500,000.

Society Issues Interesting Book on Electrical Homes

The Society for Electrical Development has issued a monograph on "Organizing and Exhibiting the Electric Home" which deals with the subject very comprehensively from the formation of the committees to the closing of the exhibition. An historical foreword, placing the date of the first real electric home as far back as 1882 and giving other results of a careful research, will be of interest. This booklet is in the nature of a reference book and will be invaluable to leagues who have already put on electric homes and others contemplating them. To the former it will suggest ideas which may be incorporated in future homes. To the latter its value will be apparent from the statement in the foreword that "It may save them much unnecessary preliminary work and assist them in avoiding possible pitfalls."

Facsimile of the new monograph published by the Society for Electrical Development, Inc., describing the methods of staging an electrical home.

The booklet, in its 64 pages, contains illustrations of many electric homes and a chart giving an analysis of the details of seventeen successful homes in this country and Canada. A map and list of homes which have already been exhibited and others contemplated visualizes the extent to which this medium has been used throughout the country as a means of educating the public to "Do It Electrically." A page of statistics will also be found of exceptional interest.

Members of the Society have already received the number of copies to which they are entitled and can obtain extra copies at the nominal cost of 50 cents. This booklet has also been made available to non-members of the Society at a cost of $1.00 per copy.

The Kootenai Power Company, which also operates in the Coeur d'Alene district, will have its valuation hearing before the public utilities commission of Idaho on August 16. This company's property inventory was filed September 22, 1919.

Meetings of Interest to Western Men

Denver League Proposes National Electrical Gathering

If plans which the Electrical Co-operative League of Denver are developing materialize, the first national meeting of electrical league and association representatives will be held at Glenwood Springs, Col., in September.

Questionnaires have been sent to all electrical organizations asking their opinion as to the feasibility of holding such a meeting in the Rocky Mountain territory and the support of the major national organizations has similarly been requested, according to E. C. Headrick, chairman of the Denver organization. It is planned to hold the meeting at the same time as the annual conventions of the Rocky Mountain division of the N. E. L. A. and that of the Colorado Electric Light, Power and Railway Association, at Glenwood Springs, September 11 to 13, or on such dates thereabouts as would be to the best interests of the meeting. It is believed that plans for joint entertainment can be effected, according to the Denver League, and that a program can be outlined which will allow ample opportunity for the consideration of all problems which might be brought before the first meeting of cooperative league representatives.

Definite decision as to the advisability of holding the meeting will be withheld until favorable reaction is secured from the other organizations interested in the movement.

New Officers Elected for Calif. Cooperative Campaign

At a meeting of the Advisory Committee of the California Electrical Co-operative Campaign, held in Los Angeles on July 21, R. E. Fisher, vice-president in charge of sales, Pacific Gas and Electric Company, was elected chairman to succeed A. W. Childs, retired, and K. E. Van Kuran, district manager of the Westinghouse Electric and Manufacturing Company, Los Angeles, was elected vice-chairman to succeed G. E. Arbogast, resigned. P. H. Booth, district manager, Edison Electric Appliance Company, succeeds R. M. Alvord; W. S. Berry, sales manager of the Western Electric Company, San Francisco, succeeds H. L. Harper, and W. L. Frost, manager commercial department of the Southern California Edison Company, succeeds A. W. Childs as members of the Advisory Committee. H. H. Walker is temporary representative of the Southern District, California State Association Electrical Contractors and Dealers, to succeed G. E. Arbogast.

The above men were all present at the meeting of this day and took up their duties as members of the Advisory Committee. The old members of the Advisory Committee present, other than those listed above, were Messrs. Bigelow, Courtright, Hillis and Young.

Mr. Fisher, in accepting the chairmanship, announced that he had not determined on a policy for the ensuing year, but expressed the opinion that the work of the Convenience Outlet Committee and the Water and Power Bill should receive most attention.

City of Los Angeles to Enlarge San Francisquito Plant

As a result of taking over the city distribution system of the Southern California Edison Company, the city of Los Angeles is preparing to increase its generating facilities. When the San Francisquito No. 1 Plant was constructed ten years ago, provision was made for a fourth unit in addition to the three placed in service at that time. This fourth unit is now to be installed. The contract for furnishing the impulse turbine, which will develop a maximum of 16,000 hp., has been awarded to the Pelton Water Wheel Company of San Francisco, which furnished the other three turbines. The 12,000-kva. generator will be furnished by the Westinghouse Electric and Manufacturing Company. The Pelton company will also supply a 57-inch needle valve. The effective head at this plant ranges between 800 and 900 feet.

Examination for the position of Valuation Engineer in special Income Tax work is announced by the U. S. Civil Service. The salary varies from $3,600 to $4,800 a year and applications will be rated as received until September 1.

COMING EVENTS

PACIFIC COAST DIVISION, AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

Annual Meeting—Vancouver, B. C.—August 8-11, 1922

PACIFIC COAST DIVISION, NATIONAL ELECTRICAL SUPPLY JOBBERS' ASSOCIATION

Quarterly Meeting—Del Monte—August 10-12, 1922

CALIFORNIA STATE ASSOCIATION OF ELECTRICAL CONTRACTORS AND DEALERS

Annual Convention—Santa Cruz—August 17-19, 1922

SOUTHERN IDAHO ASSOCIATION OF ELECTRICAL CONTRACTOR-DEALERS

Annual Convention—Hailey, Idaho—August 25-26, 1922

INVESTMENT BANKERS ASSOCIATION OF AMERICA

Annual Convention—Del Monte—October 7-11, 1922

Plans Complete for California Contractor-Dealers' Meeting

Plans for the annual convention of the California State Association of Electrical Contractors and Dealers, to be held at Santa Cruz, August 18 and 19, indicate that this session will be one of the most successful in the history of the organization, according to those in charge of the program. There will be sessions devoted to present day problems of the retail branch of the industry, discussion of the Safety Rules and some new surveys of industrial and illumination development.

The convention will open Friday morning, August 18, with a business session. Friday afternoon's meeting will be devoted to the subject of illumination and will be in charge of Clark Baker, assistant to the Pacific Coast general manager of the National Lamp Works, and F. E. Boyd, manager of the motor department of the General Electric Company's San Francisco office. Saturday morning will be devoted to a discussion of the Electrical Utilization Safety Orders, under the direction of G. E. Kimball, electrical engineer of the California Industrial Accident Commission. Saturday afternoon's program has not been announced, but it is understood that there will be one or two speakers, followed by the election of officers. The convention will conclude with the banquet Saturday evening.

Elaborate plans are being made for the entertainment of the visitors. There will be dancing Friday evening.

The convention headquarters will be at the Casa Del Rey Hotel. Special rates and arrangements have been made and those intending to take part in the convention have been urged to send reservations to J. W. Redpath, secretary of the association.

Washington Lumber Exports Quadrupled in 1922

Lumber exports from Washington for the first quarter this year quadrupled exports for the first three months of 1921. The exports to foreign countries amounted to 183,613,923 feet board measure, as compared with 42,115,913 feet board measure for the first three months of 1921, according to figures furnished by the Pacific Coast Lumber Inspection Bureau. Of the foreign shipments, Japan was the heaviest purchaser, with Australia second and China third. Countries on the west coast of South America bought 9,060,495 feet from Washington lumber mills. In the domestic trade, California was the best customer, having purchased 204,413,443 feet board measure. More than 70,000,000 feet were shipped to the Atlantic seaboard, 118,761,119 feet to Panama and 638,110 feet to Alaska.

North Pacific Coast fir has won its way into the Philadelphia market, according to advices received by a number of leading lumber manufacturers in Seattle, who are advised that Philadelphia yards have agreed to stock large quantities of lumber from the west coast, never before handled. The opening of the new market will give a big boost to water shipments of lumber to the Atlantic Coast by the Panama Canal.

Norwood W. Brockett of the legal department of the Puget Sound Power and Light Company of Seattle, is the new president of the Northwest Electric Light and Power Association. Mr. Brockett became a member of the legal department of the Snoqualmie Falls Power Company of Seattle in 1902 and upon the consolidation of that company with the Stone and Webster interests, joined the staff of the present Puget Sound Power and Light Company. He was one of the organizers of the Northwest Electric Light and Power Association in 1907 and has been actively connected with it since that time. He was the first executive secretary of the organization and served in that capacity

N. W. BROCKETT

for seven years. His activities have been largely along the lines of public policy, although he has acted as spokesman for the various sections at practically every hearing before the Washington Department of Public Works where general matters affecting the light and power industry were under consideration. He has the distinction of attending every convention and executive committee meeting of the association except during the period he served as a captain of field artillery in France. The association looks forward to a year of constructive development under his leadership.

Richard Sasche, chief engineer of the California State Railroad Commission, recently returned to San Francisco, following his participation in a conference held in Des Moines to formulate plans to resist the attempt of the railroads of the nation to increase by $10,000,000,000 the tentative valuations established by the Interstate Commerce Commission for rate-making purposes. The California commission will cooperate with other utility bodies throughout the nation in resisting any attempts on the part of the railroads to take such steps.

C. W. King of the C. W. King Company, electrical motor and equipment dealers of San Francisco, is now on an eastern buying trip to get 3,000 hp. in electrical motors and 1,000 tons of wrought iron pipe.

J. L. Schroyer, of the engineering department of the Edison Electric Appliance Company of Chicago, is visiting the Pacific Coast investigating the market for electric ranges and heavy duty baking equipment. The West, with its cheap power, is a great potential market for equipment of this kind.

Personals

Harry Chandler, publisher of the Los Angeles Times, recently received the honorary degree of Master of Arts from Dartmouth College, in recognition of his services as a journalist and a citizen.

J. V. Davies, chief engineer in charge of the water supply system of New York, **J. Waldo Smith,** of New York, consulting engineer on the Hudson and Pennsylvania tunnels, and **David W. Brunton** of Denver have been selected as a consulting board to act with the Colorado Moffat tunnel commission on the construction of the projected tunnel through James Peak.

H. C. George, oil recovery engineer of the U. S. Bureau of Mines, with headquarters at the San Francisco office of the Bureau, is in Alaska in connection with investigations being carried on by the Bureau.

Jos. Paulson has just recently assumed his new duties as representative of the A. G. Manufacturing Company with headquarters in Los Angeles, succeeding A. B. Martin, resigned, who has taken a position a representative of the Safety Electric Products Company in the Pacific-Northwest. Mr. Paulson has been with the Illinois Electric Company for the last seven years as Purchasing Agent and Office Manager. Prior to that time, he had spent five years with the Western Electric Company in the Atlanta and Seattle districts. Mr. Paulson is a graduate of the Oregon Agricultural College and completed his training at the Westinghouse Electric & Manufacturing Company's works at East Pittsburgh where he remained in the Engineering Department for one and one-half years before going to their Atlanta office where he was chief correspondent.

H. D. Titus, formerly with McDonald & Kahn, building contractors and architects of Los Angeles, has just recently been appointed district representative in the Southwest of the Square D Company, manufacturers of safety switches. Mr. Titus' experience in the building game should prove of inestimable value to the local trade.

Clare N. Stannard, vice-president and general manager of the Denver Gas and Electric Light Company, recently entertained the members of the Company's baseball team, which is heading the city commercial baseball league, at a dinner at the Denver Athletic club.

G. A. Marr, of Salt Lake City, has been appointed General Counsel of the War Finance Corporation, effective July 1, 1922. Mr. Marr has been a member of the law firm of Pierce, Critchlow & Marr for many years and has had extensive experience in the handling of legal matters connected with agricultural and live stock financing. For several months he was secretary of the Agricultural Loan Agency of the War Finance Corporation at Salt Lake City, where he gained an intimate knowledge of the operations of the Corporation under the Agricultural Credits Act, and more recently he has served as Assistant General Counsel.

B. F. Boynton, claim agent of the Portland Railway Light & Power Company was elected secretary-treasurer of the Pacific Claim Agents' Association, at the annual convention held in Los Angeles recently. The 1923 convention of the association will be held in Portland.

William C. Fitch, freight claim agent for the Southern Pacific Company, was chosen chairman of the freight claim division of the American Railway Association, at the recent convention of that organization at Denver. This is the first time in history that a Pacific Coast man has been elected to this position in the national organization.

Fred Athearn, general counsel for the Union Pacific Railway, recently presented arguments in favor of the unmerging of the Southern Pacific and Central Pacific lines before the San Francisco Electrical Development League. This is one of the most vital problems affecting the West to arise in many months and the electrical industry is showing a keen interest in it.

Magnus Alexander, managing director of the National Industrial Conference Board, will visit the West during the month of August. Mr. Alexander is coming to this section of the country for the purpose of holding conferences with the leading manufacturers, bankers and merchants on the general industrial situation.

R. E. Fisher, vice-president in charge of sales of the Pacific Gas and Electric Company, has been elected chairman of advisory committee of the California Electrical Cooperative Campaign, to succeed **A. W. Childs,** who has resigned. Mr. Fisher brings to the Cooperative Campaign a wide range of experience in the electrical industry. Previous to entering the employ of the Pacific Gas and Electric Company twelve years ago, he was with both the Pacific States Electric Company and the General Electric Company. He was also engaged

R. E. FISHER

in the contracting business in San Francisco. He was promoted to the post of commercial manager of the company in 1920 and became vice-president in charge of sales early in 1922. Mr. Fisher is also a member of the board of directors of the California Development Association and his connection with this organization will bring new ideas into the affairs of the campaign.

Major H. S. Bannion, assistant chief engineer for the Federal Power Commission, is making a tour of inspection of power sites in Idaho and the Pacific Northwest. He recently inspected the Twin Falls and Upper Salmon Falls sites, upon which filings have been made by the Idaho Power Company. He also visited developed power projects in this district. His trip of inspection of power development, actual and potential, carried him along the Snake River and down the Columbia River to Portland.

H. B. Bole of the Cleveland Electric Motor Company of Cleveland, Ohio, is a recent Pacific Coast visitor. Mr. Bole was conducting an investigation of the market possibilities in this section.

Dr. W. F. Durand, dean of the department of mechanical engineering of Stanford University, following his recent return from a trip abroad, gave a highly interesting informal talk before the San Francisco Engineers' Club on "Observations in Southern Europe and Northern Africa."

Samuel M. Vauclain, president of the Baldwin Locomotive Works, during a recent visit to the Pacific Coast, gave a highly optimistic statement of the business situation in the country at the present time. He was especially enthusiastic over affairs in the West.

A. E. Kramer, manager of the Apex-Rotarex department of the Illinois Electric Company of Chicago, is in Los Angeles on a business trip.

Anson H. Rees, formerly city salesman, has been appointed stores manager of the Illinois Electric Company in Los Angeles. Mr. Rees takes over the duties of this position after fifteen years of varied experience in the electrical industry. His first connection was with the Laclede Power Company of St. Louis, after which he completed his studies as an electrical engineer in the Missouri State University. Upon his arrival in California in 1898 he became purchasing agent for the Ventura Power Company and shortly afterward

A. H. REES

became general contract agent in charge of new business and advertising in the northern division of the San Joaquin Light and Power Corporation. For a number of years he has been city salesman for the Illinois Electric Company, calling on corporation trade. He will now have charge of the general offices, purchasing and service departments of the company.

R. F. Hamilton, consulting engineer of the Sociedad Espanola de Construccion Naval, Madrid, Spain, and a party of engineers and officials of the Northern Railways of Spain were recently entertained in San Francisco by **C. E. Heise** and **R. E. Martinez** of the Westinghouse Electric and Manufacturing Company. The party is making a tour of the electrified railways of the West. With Mr. Hamilton were **Sr. Don Moreno Ossorio,** general manager, and **Sr. Don Mario Visni Cabalero,** chief engineer, of the Spanish Northern Railways, **Professor Don Jose Pulgar,** professor of electrical engineering at the Institute Catolico de Artes e Industrias, and **Sr. Don Luis Sanchez Cuervo,** professor of electrical engineering of the Civil Engineering School of Madrid. Like other European countries, Spain is planning to manufacture as much as possible of the electrical apparatus required for its railways. The party visited many of the more important power plants, factories and electrifications of the East and West. They came to San Francisco from Deer Lodge, Mont., Seattle and Portland, and they returned to New York via Los Angeles and the Grand Canyon. They will sail from New York to France on August 2.

J. G. Berry, sales manager of the General Electric Company since 1917 and manager of its railway department for many years, and **A. H. Jackson** of the law department, were recently elected vice-presidents of the company. Mr. Berry has been with the General Electric Company for 32 years. Mr. Jackson has been head of the legal department of the company for a number of years.

H. B. Woodill, president of the Woodill and Hulse Electric Company of Los Angeles, recently left for a two months' pleasure trip to the Pacific Northwest and Alaska.

Nelson A. Eckart, for many years a member of the San Francisco city engineer's staff, has been appointed safety engineer for the city on the Hetch Hetchy project. A vigorous campaign of safety on all building and construction projects has been undertaken by the California State Industrial Accident Commission under the direction of **H. M. Wolflin,** director of safety, and the appointment of Mr. Eckart as safety engineer is the initial step on the part of the city of San Francisco to actively participate in this campaign.

Adrian Corbett of London, attorney for the Royal Dutch Shell interests, has recently completed a tour of inspection of the vast oil holdings of that company in California. In a statement issued while in San Francisco, Mr. Corbett put to flight the rumors that the British concern was contemplating taking over the control of the Union Oil Company's properties in America.

H. O. Adams, sales manager of the Electric Vacuum Cleaner Company of Cleveland, Ohio, is a recent Pacific Coast visitor.

A. H. Carhart, recreational engineer for the United States Forest Service with headquarters in Denver, has recently completed an extensive survey of the Washakie and Teton national forests in Wyoming with a view of reporting on a system of development whereby these two districts may be made accessible to tourists.

Obituary

Albert Sechrist, president and general manager of the Albert Sechrist Manufacturing Company of Denver, died suddenly July 11, after a nervous breakdown with pneumonia as a complication. Mr. Sechrist was a resident of Denver for more than fifty years and was considered a pioneer of the electrical industry of that city. In addition to the extensive lighting fixture manufacturing carried on by his company,

ALBERT SECHRIST

he developed within the last couple of years an electric pressure cooker which he recently introduced on the eastern and western markets, and it is believed that as a result of his strenuous effort on these trips his breakdown was induced. After graduating from the University of Denver he located at Greeley where he managed the first electric light company in that city, later returning to Denver where he purchased the fixture department of the Denver Gas and Electric Light Company, from which his present company is the outgrowth. For a number of years he has been active in Y. M. C. A. work in the Rocky Mountain region, and during the first year of its organization served as a member of the Advisory Board of the Denver Electrical Co-operative League.

Alexander H. Patterson, for many years vice-president and general manager of the Phoenix Glass Company of Pittsburg, died at his home in New York City recently. Mr. Patterson was one of the pioneers in the electrical industry on the Pacific Coast, having sold lighting fixtures in this section during the early '70's. His last visit to the West was in 1920.

Claude P. Gordon, electrical engineer and construction superintendent for Thompson and Castleton, Inc., Seattle, died in Wichita Falls, Tex., recently. Mr. Gordon was in charge of the electrification of a dredge and the installation of the electrical equipment for a dam being constructed at Maybelle, Tex., by the Puget Sound Bridge and Dredging Company. Mr. Gordon was 29 years old and a member of the American Institute of Electrical Engineers.

Manufacturer, Dealer, and Jobber Activities

The Majestic Electric Development Company of San Francisco has just recently opened a branch office in Los Angeles at 204 No. Los Angeles Street with **Arthur Kempston** as district sales manager for Southern California.

The U. S. Electrical Manufacturing Company of Los Angeles announces the opening of an office in San Francisco some time during the month of August, at which time they will have a representative in the northern city to look after the interests of the company in that territory.

The Electrical Products Corporation of Los Angeles, of which **Paul Howse** is president, purchased the interests of **Fred W. Miller**, theatre lighting equipment specialist, on July 14. This firm will continue to operate as the theatre equipment division of the Electrical Products Corporation with **Claude D. Seaman** as manager. Mr. Miller started the original business in 1914 on a capital of $400 and reports that he has taken $62,000 out of this business during the past eight years. He is retiring to enter the oil business.

The Hall Electric Utilities Company has just recently been incorporated in Los Angeles under the name of Hall-Webb Company and has moved to 320 So. San Pedro Street. They are representatives for the Westco domestic pressure water system, Chippewa deep well pressure water system, Black & Decker drills and garage equipment, and the Matthews electric light and power plants for ranches and yachts. Mr. Hall has been conducting the Hall Electric Utilities Company for the past four years. Prior to that time he had been manager of the industrial department of the General Electric Company in Los Angeles. Mr. Webb has been connected with the A. J. Deer Company of Hornell, New York, manufacturers of electrical meat grinding equipment.

Leslie De Baker, formerly of the Western Light and Power Company in Boulder, has opened the Electric Shop, a contracting firm, at Fort Morgan, Colo.

B. C. Ritter, formerly of the Western Light and Power Company at Boulder, Colorado, has taken charge of the Frigidaire refrigerator department for E. H. Frazier, the Delco Light Company, distributor in Denver.

Haag Bros. Co., Peoria, Ill., will shortly place on the market a new type "Oscillator" washing machine which has many refinements in design. The machine will have an all-metal copper tub, full swinging wringer, eight sheet capacity and 12-in. wringer rolls. The belt has been eliminated in the new machine, which is friction driven. It is equipped with machine cut gears which run in a continual oil bath.

Harvey Hubbell, Inc., Bridgeport, Conn., has issued a series of five attractive circulars describing new specialties which have been produced by the company recently. Sockets, T-caps, shadeholders, plugs and a new lighting unit furnish the material for the various circulars. All are done in color and make attractive counter literature for the contractor-dealer.

The Killark Electric Manufacturing Company, St. Louis, has just brought out a new conduit fitting known as type FB entrance fitting for 2½ and 3 in. conduit. The fitting consists of three parts, a cover, a hub and a plate holding 2, 3 or 4 porcelain bushings. The fitting has been designed for use on either vertical or horizontal pipe and is furnished in either japanned ar galvanized finish.

The Westinghouse Electric & Manufacturing Company, East Pittsburgh, has just issued a new catalog supplement describing the Westinghouse line of insulating and soldering compounds and announcing the extension of that line of products. The materials discussed in the supplement are baking and air-drying varnishes, insulating compounds, finishing materials, including paints, enamels, lacquers, etc., insulating glue, soldering flux and lubricating oil.

The Hobart Brothers Company, Troy, Ohio, has just placed on the market a new constant potential battery charger. The device is smaller than average and has been designed primarily for installation in the small shop. The machine has a capacity of 200 amperes.

Schweitzer & Conrad, Inc., Chicago, has just issued a new bulletin, "Lightning Arrester Performance" describing the company's graded resistance sphere gap arrester for high tension lines.

The Magee Furnace Company, Boston, Mass., has just placed on the market a new combination gas and electric range which is known as the "Electri-Gas." The electric half of the range comprises an insulated electric oven and an electric broiler controlled from a specially designed switchboard while the gas half consists of four gas burners and a simmerer which are automatically lighted from a push button. The range is also made for straight electric and straight gas operation as well as for the combination.

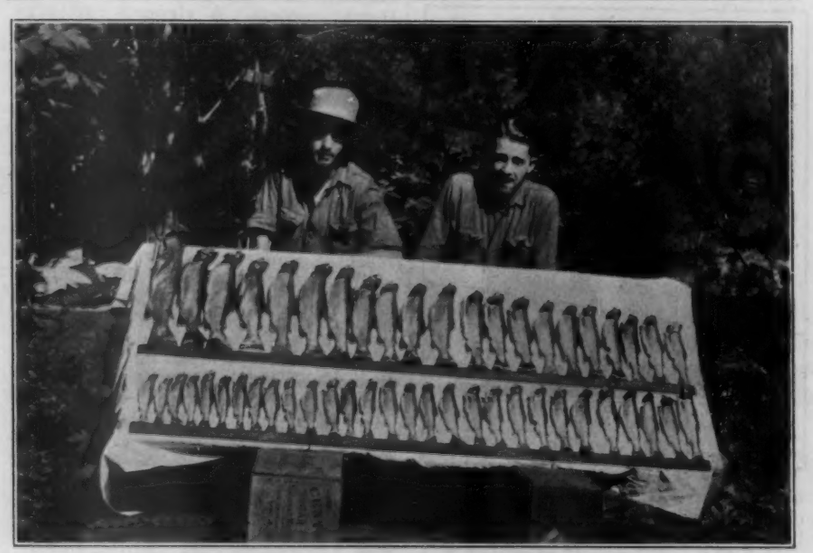
The Esterline-Angus Company, Indianapolis, Ind., has developed an instrument which will measure both alternating and direct current voltage. It is known as the "Utility" voltmeter and has been designed to work with the "Utility" wattmeter, which also records on both alternating and direct current circuits. Literature has been issued on this subject and may be had upon application to the company.

The Westinghouse Electric & Manufacturing Company, East Pittsburgh, has just issued Reprint 118, entitled "The Question of Inductive Interference and Electrolysis as Related to Railroad Electrification." The publication reviews briefly the causes of inductive interference and the remedial measures which have been applied, citing definite experiences with alternating single phase installations.

The Rome Wire Company, Rome, N. Y., announces that it has taken an interest in the Atlantic Insulated Wire and Cable Company. The latter company will continue to manufacture its well known brands of rubber covered wires and cable.

The Allis-Chalmers Manufacturing Company, Milwaukee, Wis., has just issued Bulletin No. 1124 entitled "Synchronous Motors." The booklet contains a large number of illustrations of the adaptability of this type of motor to commercial usage in installations requiring either belted, coupled or direct connected service. Commercial applications are shown with the motor driving air compressors motor-generator sets, rubber mill machinery, ice and refrigerating machinery, paper making machinery and mining apparatus.

The Coeur d'Alene Electric Shop is featuring a full line of electrical appliances at Coeur d'Alene, Idaho. Proprietors: J. E. Whitney and T. J. Robertson.



NOW. — SPEAKING OF FISH STORIES.——

We hate to take advantage of our position to appear to boast about our piscatorial prowess, but "Ye Editors," Tenney and Gallison, reading from left to right (in the top row), hereby challenge members of the electrical industry to show something better. The other fish (two lower rows) were rainbow trout, captured with flies in the Feather River, without the aid of dynamite or friendly Indians, all in one evening.

Business Outlook in Western Market Centers

Reflecting the Trend of Community Thought on Conditions and Events Affecting Business and Industrial Activities Throughout the West

Compiled and edited for the Journal of Electricity and Western Industry by correspondents in all principal Western cities.

SALT LAKE CITY

Reports from practically all sections of the intermountain territory indicate that business is still on the upward trend.

Conditions in the mining districts are particularly favorable, especially in the silver and lead producing camps. In such mining centers as Park City and Eureka, there is more activity than has been seen for some time . At the present time the copper market is rather quiet and the price of the metal is still comparatively low. However, the present rate of production will continue at the Utah Copper Company, where operations have been gradually increased during the past few months.

In the general retail trade there is the usual summer slump in some lines, while in lumber and builders' hardware and other building commodities business is good.

Electrical dealers report a fair business in wiring material and various household appliances. Building activity continues at a very satisfactory pace.

The new electrical home which is now being exhibited in Salt Lake City, and the electrical exposition to be held there October 2 to 14, inclusive, are commanding much attention, both from the electrical people and the public in general.

Money is easier, and collections are fair.

SEATTLE

Business in Washington and the Puget Sound district shows steady and continual improvement, and figures show that the monthly purchases of individuals and concerns in Washington were $400,000,000, as compared with $370,000,000 for May of 1921.

Financial authorities express the opinion that the local banking situation reflects very creditably the stimulated industrial activity of this section, with a total of deposits as of June 30 of $140,520,156.

June was one of the best construction months Seattle has experienced in many years, with permits valued at $2,892,030 being issued. The past month's permits call for building construction of all classes, with a satisfactory volume of new home building. The total amount of money involved in buildings for which permits were issued during the first six months of the year, amounts to more than $10,000,000.

Due to the customary mid-year repair season and July 4 holiday, lumber production in western Washington dropped 33 per cent below normal for the week ending July 8. Many districts of the Puget Sound and Grays Harbor country are threatened with extreme log shortage, due to the fact that logging camps in many vicinities are either shut down or operating only part time on account of the fire menace.

PORTLAND

Building continues at the rapid pace set during the early months of this year and the total value of building construction was recently augmented by the announcement of plans for the construction of a $2,000,000 office building.

Lumber production has fallen off slightly as a result of the usual midsummer lull in the industry. Logging operations in many cases have been suspended owing to the forest fires that are raging throughout the Northwest. The damage from these fires to property and timber is running into the millions.

Although the fruit crop in this section is only about 50 per cent normal due to the sub-normal temperature last winter, the size and quality are unusually good, and it is expected that the higher prices brought by the exceptional quality will more than offset the loss due to the small crop.

Electrical jobbers and contractor-dealers report business very good and anywhere from 25 to 150 per cent better than for the same period last year. The record construction program is partly responsible for the increased sales.

LOS ANGELES

There were 1,689 building permits issued for the first fifteen days of July, or a total of $3,581,294, which represents an increase over the corresponding period of the year 1921 of approximately 25 per cent. This brings the total building for the year to $63,-040,544.

Bank clearings for the first fifteen days of July amounted to $216,558,218, which compares with the corresponding period of 1921 as an increase of approximately 25 per cent.

The sale of electric fans during the year 1922 has proven very good despite the weather, which has been cooler than the previous year.. This is especially true of ceiling fans. On the whole, business at this season of the year has proven better than the corresponding period last year. A shortage of conduit is reported in Los Angeles and southern California, due to the enormous number of buildings which are being constructed throughout the southern portion of the state. The money market is comparatively easy, but collections from the smaller concerns are still slow in most cases.

DENVER

Building operations kept up during July, the permits for the first eighteen days alone totaling $558,000. This building boom has resulted in a marked increase in employment, according to the U. S. Department of Labor, which has just completed an extensive industrial survey of this city.

"No large industrial plants in Denver are closed," the report says. "A few are operating on part time but all are gradually increasing their forces of workers. All building construction plants are operating to capacity with increased forces."

According to the post office department, June receipts at the local office were the highest in several years. They amounted to $225,25'.51, an increase of 11 per cent over last year.

The Denver bank statements of June 30 showed total deposits of $152,086,-673, which is the highest figure on record since November 15, 1920. Deposits increased $3,500,000 during May and June and bank clearings for the same period showed an increase of 9 per cent over the corresponding period the year before.

The railroad and coal strikes have not improved business morale. The printing business is in a bad slump. Department store business is slack. Electrical dealers report a very slow movement of appliances.

SAN FRANCISCO

The reduction in interest rates during the past three months has exceeded the expectations of the most optimistic. The present liberal supply of available funds for investment makes it easy for corporations to issue six per cent bonds that two years ago had to pay eight per cent for money.

Reports on foreign trade for the month of May show an appreciable gain over any previous month of 1922 and indicate that commerce is gradually picking up.

Preparations for California's second annual Industries Exposition to be held in October indicate that exhibits will be more complete than last year. Indusrtial activity is resuming and factories are putting more men to work.

California canneries in this district are making preparations for the greatest pack of fruit in history. There are no holdover supplies from last year and the demand is strong both for domestic use and for export.

Electrical appliances, owing to the season, are moving slowly. Trade in practically all lines is feeling the summer slump. However, jobbers are making preparations for an active fall buying campaign.

Construction News and Industrial Developments

Suggesting to the Engineer, Contractor, Manufacturer, Dealer, Agent and All Business Men Opportunities for New Business

Bridges

Cal., Carpinteria—The board of supervisors will shortly advertise for bids for the construction of a concrete and reinforced steel bridge across Santa Monica Creek at Foothill Boulevard.

Cal., Colusa—The county supervisors have awarded the contract for the motorization of the Colusa drawbridge to Jenkins and Wells for $13,825.

Colorado, Fort Morgan—The Colorado Bridge and Construction Company of Denver has been awarded the contract for the construction of a concrete bridge over the South Platte River on North Main Street at a cost of $80,939.39. An ornamental lighting system will be installed on the bridge after it is completed.

Idaho, Caldwell—Charles E. Silbaugh, contractor, who will erect the $47,000 new steel bridge over the Boise River here, is assembling material preparatory to commencing construction. The bridge will have concrete abutments and foundations, and will be about 510 ft. in length and 20 ft. wide. It will have three spans of 170 ft. each. The floor will be of the laminated wood type, covered with asphaltic wearing surface. It is estimated that the work will occupy about three months' time.

Wash., Seattle—The Reliable Iron & Wire Works, on a bid of $28,406, received the contract for installing crossing towers for the Spokane Street bridge across the west waterway at Riverside.

Wash., Olympia—The Penn Bridge Company, of Beaver Falls, Pa., on a bid of $283,296, received the contract for the construction of a new steel bridge across the Snake River, at Central Ferry, connecting Whitman and Garfield counties. The structure will be 700 ft. long, and quantities involved include 4,270 cu. yd. of concrete; 210,000 lb. of steel bars, and 1,900,000 lb. of structural steel.

Wash., Yakima — County commissioners of Yakima county wil lreceive bids until August 5 for the construction of a steel bridge, 252 ft. long, with 20 ft. roadway, across the Naches River, at Painted Rocks. The bridge is estimated to cost $40,000. W. C. Marion is county engineer.

Wash., Aberdeen—L. F. Isaacson has had plans drawn by the Strauss Bascular Bridge Co. of Chicago, for a bascular steel bridge over the Wishkah River. When the details are prepared the plans will be put up to the city council.

Wash., Kennewick—The Union Pacific Railroad will start work in six weeks on a new steel bridge across the Columbia River at Kennewick.

Buildings (Industrial)

Cal., Live Oak—Mill—K. M. Swearing, milling man of Salinas, is the head of a company which proposes to erect a $30,000 grain warehouse and mill at Del Mar. The building will be of corrugated iron.

Cal., Petaluma—Silk Mill—Architect Brainerd Jones is preparing revised plans for the addition to the Belding Bros. silk mills in East Petaluma. The building will cost $40,000.

Cal., Huntington Beach—Refinery—The Mutual Oil Refining Company will shortly commence the erection of an oil refinery on ten acres of land at Garfield and Huntington Sts.

Cal., Oakland—Plant—The Atlas Imperial Gas Engine Company is preparing to construct an addition to its present plant at Nineteenth Avenue and East Twelfth Street. The new plant will cover 44,000 sq. ft.

Cal., Napa—Packing House—The contract for the construction of an addition to the Growers' Packing and Warehouse Company's plant here has been awarded to the West Coast Construction Company. The estimated cost of the new building is $65,000.

Cal., Lafayette—Factory—The Highland Manufacturing Company, of Chicago, has purchased several acres of land here where it proposes to erect a factory for the assembling of automobile accessories. Twenty cottages will also be built on the property for workmen.

Ore., Portland—Mill—The $40,000 lumber mill of the Cameron Hogue Lumber Company will be rebuilt, according to announcement.

Wash., Seattle — Factory — The Washington Mattress Company has awarded a contract to the Stewart Construction Company of Seattle for a three-story and basement fireproof addition to its mattress manufacturing plant, to cost $53,010. Structure will be 83 x 120 ft. and fireproof throughout.

Wash., Tacoma—Packing Plant—Thomas Carstens, packer, has started construction of the first unit of his new reinforced concrete and steel packing plant, which with equipment, will cost $1,500,000, and will be completed in six months. Within two years the entire plant will be doubled, and the enlarged plant will permit expansion of present yearly output of $10,000,000 to $20,000,000. The concrete superstructure will be four stories high, 57 x 72 ft. with a wing 32 x 40 ft., three stories. P. V. Cornils, architect of the company, prepared the plans and will supervise the work.

Wash., Tacoma—Shops—H. A. Lyddon, superintendent of shops for the Northern Pacific Railroad, announces that a welding plant costing $35,000, with equipment to cost $70,000, will be built for the company in South Tacoma.

Wash., Spokane—Milk Plant—The Hazelwood Company, Ltd., Fred N. Martin, secretary-treasurer, has purchased a site 300 x 160 ft., on which will be erected a complete new milk products plant.

Wash., Spokane—Mill—The erection of a mill six miles from Deer Park is planned by the American Ochre Co. of Spokane.

Wash., Spokane — Lumber Mill — A modern lumber factory to cost $100,000 is being built by the Potlatch Lumber Co. at Spokane.

Wash., Tacoma—Lumber Mill—The milling plant of the Peterman Manufacturing Company, which was damaged to the extent of approximately $180,000 by fire, destroying the new electrically equipped mill and practically all of the stock, will be rebuilt immediately, according to plans announced by T. A. Peterman, president of the company.

Buildings (Miscellaneous)

Cal., Oakland—Office Building—The Tribune Publishing Company has announced that construction of a 19-story office and newspaper building adjacent to the company's present structure will commence shortly after August 1. The building will be of Class A construction. Plans have been prepared by Architect E. T. Foulkes of Oakland.

Colo., Denver—Oil Station—The Sommers Oil Company has purchased the property of the Bell Filling Station and Service Company at Fifteenth Street and Cleveland Place and will shortly replace it with a new building to be used for the same purpose, at an estimated cost of $65,000, which will closely conform in architecture to the designs on the Civic Center across the street.

Colo., Boulder—Fraternity — The Sigma Nu Fraternity has started construction of a $40,000 home on University Hill which will be an "electric frat house," it is said.

Colo., Fort Collins—Chemistry Building — A new chemistry building to cost $117,000 has been started at the State Agricultural College. According to President C. A. Lory, the lighting and ventilating systems will be of the latest and most improved designs.

Colo., Denver—Garage—A $50,000 service garage for the motor equipment of the local post office will shortly be built by James A. Curran at Twenty-third and Arapahoe Streets, according to a recent announcement of Postmaster Frank L. Dodge.

Ida., Idaho Falls—School—Fred Salih, of Idaho Falls, has been awarded the general contract for the building of a new modern high school at Cokeville, Wyoming. The amount of the contract is approximately $65,000.

Ida., Sandpoint—School—Jasper & McLean, Spokane contractors, on a bid of $81,580 secured contract for the erection of a high school building.

Ore., Portland—Office Building—Plans for the erection of a ten-story office building, costing more than $2,000,000 on the site of the old Failing home, bounded by Fifth, Sixth, Taylor and Salmon Streets, are being promoted. Definite announcement is expected to be made soon.

Ore., Portland—Apartment—Zanello Brothers, general contractors, secured the contract and will start work immediately on the erection of a large apartment building estimated to cost $110,000 to be built for Theo. Williams, Board of Trade Building, at the southeast corner of 19th and Davis Streets.

Ore., Portland—Store—Construction work on the new two-story building for the Howard Cooper Company at 361 Hawthorne Avenue between East Third Street and Grand Avenue, has started. The building will be of concrete and will cost approximately $30,000 when completed. A. C. Myers is the contractor. W. W. Lucius, architect, drew the plans and specifications.

Ore., Prineville—Hotel—Construction work is expected to begin this month on Prineville's new $100,000 hotel, which is being incorporated by Mrs. C. E. McDowell, Jay H. Upton and W. O. Hall. J. V. Bennes, Portland architect, is drawing plans.

Ore., Astoria—Theater—The management of the Astoria Amusement Co. has announced that a contract has been made for the construction of a new $75,000 motion picture theater on the present site of the Liberty Theater on Commercial Street. E. W. Houghton, of Seattle, is to build the theater. Construction will start this fall.

Ore., Prineville—Hotel—John V. Bennes, Portland architect, is preparing plans for the erection of a new hotel to replace the one destroyed by fire recently. The hotel will be thoroughly modern and will cost in excess of $100,000.

Ore., Portland—Apartments—Houghtaling & Dougan are preparing plans for a four-story apartment house to be built at the northeast corner of 13th and Market Streets. The building will be of brick construction and will cost about $80,000. Ulrich & Co., in the Stock Exchange Building, represent the owners.

Ore., Astoria—Hospital—Architect Hicks, of Astoria, is preparing plans and specifications for the new $200,000 Fraternal Hospital to be erected at the corner of Sixteenth and Franklin Avenue, upon property 200 by 200 ft. in size recently purchased by the Fraternal Hospital Association from the Van Dusens.

Utah, Ogden—Bakery—Construction has been started on the new two-story unit of the Ogden Baking Company plant on Grant Avenue between Twenty-fifth and Twenty-sixth Streets. The building is to be of concrete, steel and brick construction, and will cost about $50,000. The company this fall will install two new electric ovens for bread baking.

Wash., Vancouver—Lodge—A tract of land has been purchased by the Oregon and Washington state councils of the Knights of Pythias on which a home for these organizations will be erected. W. C. Knighton of this city will prepare the plans. It is expected that the building will cost about $100,000.

Wash., Seattle—School—Preliminary sketches for a proposed $60,000 high school to be built in Tenino, prepared in the Seattle offices of Woheb & Stanley, architects, have been approved and the preparation of the working drawings will be started immediately in the Olympia offices of the firm from where a call for bids on the general and sub-contracts will be issued early in August. According to announcement by Architect Stanley of the Seattle office, the building will be T shape, 208 ft. long, of modified colonial design.

Wash., Centralia—Store — John Hughes will commence immediately the erection of a brick store building at the corner of Tower Avenue and Locust Street. The building will be 97 x 120 ft. and one story high. It will cost about $20,000.

Wash., Seattle—Club—A. H. Albertson, architect, Henry Building, announced that plans for the proposed $400,000 nurses' club building to be erected in Seattle early next year have been started. The projected building is to be of brick and steel construction, seven stories in height, and will be one of the finest buildings on the Pacific Coast.

Wash., Wenatchee — Warehouse — A contract has been let by the Lake Chelan fruit growers to A. A. Vandivort for the erection of a modern frost-proof, air-cooled, storage warehouse.

Wash., Seattle—Apartment—The largest building contract ever let in Seattle was recently signed by the Dexter Horton Estate in awarding contract to the Puget Sound Bridge & Dredging Company for removing the Third Avenue half of the New York Block and erecting the first unit of the proposed bank and office building to cost, when completed, $5,000,000. The first unit will be 12 stories high, costing $2,500,000, and work will proceed immediately.

Wash., Port Angeles—School—Chris Kuppler & Sons, here, received the contract for erection of three school buildings, costing $67,000.

Wash., Walla Walla—Apartment—H. L. Neslin plans the erection of an apartment house here, to cater only to families with children. Building will cost approximately $50,000.

Wash., Everett—School—W. C. Pabst received the contract for erection of the three-story brick addition to Garfield School, to be 64 x 125 ft. and to cost $60,000.

Wash., Seattle—Y. M. C. A.—Murdock & Eckman, Thompson Building, on a bid of $46,600, received contract for the Y. M. C. A. Building on the University Campus.

Wash., Seattle—Nurses' Home—Architect A. H. Albertson, Henry Building, is preparing plans for a proposed Nurses' Club and Home, to cost $400,000 and to be erected by the King County Association of Graduate Nurses. Structure will contain 200 rooms, and will be 120 x 90 ft. in size.

Wash., Seattle—School—St. Alphonsus Parish has awarded to Contractor Charles H. Schaar, 721 Twenty-first Avenue, the contract for a $100,000 school to be built at West 58th Street. Structure will be three stories, 59 x 199 ft.

Wash., Seattle—Apartment—Louis Levy plans the erection of a five-story and basement apartment house, costing $100,000, to be built immediately. Building will contain 44 apartments of two and three rooms each, and will be electrically equipped throughout, including electric automatic elevators.

Wash., Aberdeen—Hotel—The Washington Hotel Company heads the financing of a proposed $300,000 hotel to be built here, and to contain 200 rooms. Architect A. H. Albertson, Seattle, has prepared plans, and the Rotary and Kiwanis Clubs are backing the project. Plans provide for a four-story building, 100 x 100 ft. in size.

Wash., Tacoma—Hospital—Construction of the U. S. Veterans' Hospital at Camp Lewis, to cost $3,000,000, will start within 90 days, according to Col. C. B. Forbes, head of the Veterans' Bureau, who is now in Tacoma. A site has been selected, and hospital will cover 30 acres of land, the entire site being 300 acres.

Highways

Cal., Sacramento—A contract for grading approximately eight miles of highway in Lassen county has been awarded to the Warren Construction Company by the State Highway Commission. The bid was $37,056.

Cal., Napa—The board of supervisors has awarded the contract for the construction of four miles of concrete highway from the city limits to Brown's Valley to the Western Construction Company of San Francisco on a bid of $47,449.75. Work will be completed within three months.

Cal., Sacramento—The State Highway Commission has awarded the contract for paving 10.82 miles of highway in Santa Barbara county to the Southwest Paving Company of Los Angeles at a price of $103,705. All materials are to be furnished by the state.

Cal., Sacramento—A contract for paving 8.77 miles of highway in Orange county has been awarded to George H. Oswald, of Los Angeles, on a bid of $126,615. With the materials which are to be furnished by the state, the total cost for the job will be $193,160.70.

Cal., Sacramento—The State Highway Commission has awarded a contract for grading sixteen miles of the Redwood Highway in Humboldt county to the Pacific Construction Company of San Francisco on a bid of $439,211.50. This is approximately $50,000 less than the estimate prepared by the commission's engineers.

Ore., La Grand—The county court authorized the letting of the Wallowa hill contract to the Sloan Construction Co. The bid for 5.38 miles of road amounted to $28,375. The section lies in the two counties, about four miles in Union and the remainder in Wallowa.

Wash., Spokane—The Triangle Construction Company, here, on a bid of $36,562, received the contract for surfacing with gravel nine miles of road between Pa'ouse and Garfield.

Wash., Seattle—The contract for the completion of the Orilla-Kent paving has been awarded to Cornell Bros. and Walsh of Tacoma on a bid of $138,500. The job consists of laying 4.38 miles of concrete paving, twenty feet wide.

Wyo., Thermopolis—The Utah Construction Company has commenced work on the construction of fourteen miles of highway into Yellowstone National Park. The contract price is $294,347 and it is expected that the work will require until April, 1923, to complete.

Irrigation Projects

Cal., Chico—Two thousand acres of land are included in the irrigation plans just completed by J. B. Thompson, local civil engineer. No irrigation district will be formed, but each farmer in the tract to be irrigated will pay $41 per acre for the water. Water will be taken from the Sacramento River near Nord.

Cal., Oakdale—The board of directors of the Oakdale Irrigation District have called a special election for August 5 for the purpose of voting $50,000 for needed improvements to the district.

Cal., Santa Barbara—A $90,000 bond issue for the repair of the Gibraltar Dam carried at a recent election. Work will be completed before the winter rains.

Cal., Fall River Mills—The Fall River Irrigation District, comprising 13,000 acres in this vicinity, has been created as the result of a recent election. Under the present plans three large pumping stations will be built to raise the water from Fall River to the land to be irrigated.

Ore., Salem—Plans and specifications for the Crescent Lake reservoir for the storage of water for the Tumalo irrigation project have been filed with the state engineer and if approved bids will be called for. The approximate cost of the work will be $40,000.

Ore., Salem—Tentative plans of the Klamath drainage district, whereby the district proposes to issue bonds in the sum of $200,000 and develop ultimately 27,000 acres, were filed by J. C. Stevens, engineer for the district.

Utah, Goshen—Initial steps have been taken for the organization of a drainage district to reclaim 2,000 acres of land at Genola, near Goshen, in Utah county.

Wash., Spokane—Construction of the irrigation canal from Prosser Falls to Kennewick will be undertaken by the Kennewick Irrigation District at an early date. Funds for the immediate construction of the canal will be raised through a $4,000,000 bond issue.

Power Projects

Colorado, Saguache—If the plans of the city council materialize, the Colorado Power Company will run a 16,000-volt line from Salida to this place which will provide 24-hour service.

Ore., Marshfield—It is reported that the Mountain States Power Company, with headquarters at Albany, is soon to build a transmission line to the town of Powers, which will cost $25,000.

Utah, Logan—The construction of a large flume in Logan canyon, to cost approximately $100,000, has been begun by the Phoenix Utility Company. The flume will replace the old one running from the dam of the Utah Power and Light Company to the power plant at the mouth of the canyon. It will be two miles in length.

Utah, Salt Lake City—The Mays-Gandy Company, 1022 Kearns Building, Salt Lake City has filed application with the state engineer for the use of 20 second-ft. of water from the Huntington River in Emery county, with which to develop 1,000 hp. for use in the company's mines in Emery. The water is to be used under a head of 208 ft., according to the application.

Power Plant Equipment

Cal., Merced—The Turlock Irrigation District will receive bids until 2 p.m. August 3 for the construction of approximately 28 miles of 66,000-volt transmission line. The material to be used includes about 200 steel towers, 170 miles of either copper or steel reinforced aluminum wire, 6,000 insulators, switchboards, lightning arresters, and oil circuit breakers.

Cal., San Francisco—Bids for supplying approximately $135,000 worth of electrical equipment for the Moccasin Creek power plant on the Hetch Hetchy project will be received by the Board of Public Works until August 9. The equipment includes transformers and accessories and switchboards and accessories.

Wash., Tacoma—Bids for a one-story building for the city's new steam plant received by Ira S. Davisson, commissioner of light and power, showed J. E. Bonnell, Tacoma, low at $22,993 for brick, and $21,273 for concrete, and he was awarded the contract. Structure will be 113 x 60 ft.

Wash., Seattle—Board of Public Works has awarded contracts totaling $36,304.87 for furnishing electrical apparatus for the Spokane Street sub-station, to four separate electrical jobbing concerns in Seattle, as follows: General Electric Company, $13,588.27; Westinghouse Electric & Manufacturing Company, $16,446; Eicher & Bratt, $3,300; Garland-Affolter Engineering Co., $2,970.

Wash., Seattle—In conjunction with the purchase of power and water systems of Montesano and Elma formerly operated by the Northwest Light and Power Company, the Washington Coast Utilities Company of Seattle will immediately begin the construction of a 12-mile transmission line from Grays Harbor to Elma. The work will also include the construction of a modern substation at the latter town.

Wash., Seattle—The Puget Sound Power and Light Company has begun the construction of a 110,000-volt transmission line from its hydro-electric plant near Easton to the Wenatchee Valley. It is estimated that the line will cost $800,000. It will deliver 30,000 hp. to one of the richest agricultural districts in central Washington.

Railroads

Cal., Los Angeles—A tract of 516 acres south of Montebello and adjoining the city of Los Angeles on the east, has been purchased by the Union Pacific Railway Company. It will be used in developing one of the largest classification yards and shop centers in the West. This tract will be improved in conjunction with the 516-acre tract adjacent to Belvedere Gardens, acquired by the company several years ago. Several million dollars will be expended in the construction of tracks and buildings.

Cal., Santa Monica—Construction of a belt line from Santa Monica to the Palisades is being agitated by the Pacific Palisades Association and is said to have received the tentative approval of officials of the Pacific Electric Railway Company. It is proposed to extend the traction line north along the beach from the present terminal near the old Southern Pacific wharf to Temescal canyon, thence through the Palisades tract, returning to the city via Eighth Street on a viaduct over Santa Monica canyon.

Ore., St. Helens—The Deer Island Logging Co. is extending its logging railroad for about six miles so as to tap a fine body of timber which is back of Trenholm and on the Little Clatskanie River. There is close to 200,000,000 ft. in the tract which the company recently acquired and they will begin logging operations in that vicinity in eight or ten months.

Utah, Gunnison—Gunnison Valley has been practically assured of a branch line of the Denver & Rio Grande Western Railroad to tap the Westview and Clarion mining districts.

Utah, Delta—The Union Pacific Railroad has started the construction of a 35-mile branch through Millard county which will include the towns of Fillmore, Harding and McCormick. It will open up a rich farming country, much of which is devoted to sugar beets for the factory at this place.

Streets and Sewers

Ariz., Bisbee—Five hydrants and a high pressure water system are to be installed in the business district immediately for further increasing the fire protection facilities of the city.

Cal., Yuba—The city trustees have set August 8 as the date for voting on a $50,000 bond issue for completely rebuilding the sanitary sewer system.

Cal., Healdsburg—Preliminary steps for the calling of an election for the purpose of voting $10,000 for the extension of the present sewer system have been taken by the city trustees.

Cal., Venice—Plans are under way for the purchase of the entire ocean front from the Municipal Pier north to the city limits for use as a playground. Numerous street improvements, including the construction of a concrete promenade, are included in the plan.

Cal., Lakeport—Bonds to the extent of $60,000 have been voted for the purpose of extending the city's water supply system. The issue includes an additional $10,000 for the improvement of the sewer system. Plans and specifications are being prepared by the city engineer.

Utah, Ogden—Contract for paving the dugway road leading from Harrison Avenue to the mouth of Ogden canyon has been let to the Taylor-Child Construction Company for $26,280.

Wash., Seattle—Contract for paving of Yale Avenue was let to R. G. Stevenson, 1327 North 34th Street, on a bid of $61,191.

Wash., Port Angeles—The city council recently rejected bids received July 12 for contract to lay approximately 14,000 ft. of sewers at a cost of approximately $35,000. The bids were too high. Pipe will vary from 6 to 21 inches in size.

Street Lighting Systems

Wash., Olympia—Contract for immediate installation of a boulevard lighting system in Olympia's downtown district has been awarded to the Post Electric Company of Olympia. The "Arcadian" pole and light will be installed.

Wash., Mountain View—Arrangements have been completed with representatives of the Stone & Webster interests which will bring electric lights to this city and surrounding farming territory. More than sixty farmers have signed for the service.

Wyo., Green River—The town of Green River is contemplating the installation of an ornamental street lighting system.

Waterworks

Ariz., Nogales—All bids for furnishing and laying the new gridiron system of city water mains have been rejected as too high and new bids ordered submitted. Specifications for the new bids are being prepared by City Engineer L. C. Kelsey.

Cal., Napa—August 15 is the date set for the $600,000 bond election for purchasing the system of the Napa City Water Company and developing the Milliken Creek project. Of the $600,000 to be voted, $240,000 will be required for the purchase of the present system and $360,000 for the development of Milliken Creek as an added source of water supply.

Cal., Delano—City water bonds to the extent of $15,000 have been sold and work on extending the water mains will be started immediately.

Cal., Santa Cruz—The city council has decided on a site for the chlorinisation plant which is to be erected near the present reservoir for the purpose of purifying the water which is furnished the east side.

Calif., South Pasadena—South Pasadena has taken steps to initiate a project to provide an adequate and dependable water supply for Pasadena, South Pasadena and Alhambra. A conference of officials of the three cities has been proposed to consider an agreement for the construction of an impounding reservoir on the West Fork of the San Gabriel River. The cost is estimated at $1,000,000, half of which would be borne by Pasadena while the other half would be divided between South Pasadena and Alhambra. Despite the heavy rains of the last season replenishing the underground supply, South Pasadena has not sufficient water to meet mid-summer demands and Pasadena's present surplus of water is regarded as only temporary.

Cal., Santa Monica—Additional water supply for the Palisades district of Santa Monica is proposed by Wm. H. Carter, commissioner of public works, by the development of water-bearing lands near Sycamore Springs, Santa Monica canyon, on which the city has a ten-year lease. Water can be obtained there economically by drilling wells, and can be distributed by gravity.

Ore., Marshfield—A. B. Gidley of Marshfield, bidding $29,380, secured the contract for the construction of the storage project and improvements to the water system at Coquille. Plans for the project were completed by Stevens & Koon, engineers, Portland. The work includes an earth and rock fill dam of 18,300 yards, 12 acres of clearing and grubbing, spillway wing, miscellaneous piping, valves and appurtenances.

Wash., Walla Walla—The Puget Sound Bridge & Dredging Company, on a bid of $132,715.50, received the contract for Division No. 2 of the Walla Walla waterworks system. The contract involves the laying of four miles of pipe, construction of dirt road, and installation of telephone system. E. B. Hussey, civil engineer, Seattle, is engineer on the project.

Miscellaneous

Cal., Los Angeles—Piers—The Ross Construction Company was the low bidder for the erection of the concrete piers for the steel lift bridge to be erected over Cerritos Channel. The bid was $262,000, or 20 per cent higher than the estimate presented to the city council by the city engineer's office.

Cal., Los Angeles—Wire—The Western Electric Company has been awarded a contract by the City Light Department for furnishing $125,000 worth of power transmission line cable.

Cal., Sacramento—Gas Plant—The Pacific Gas and Electric Company is making improvements and additions to its gas plant here to the extent of $100,000. The work includes the installation of two 250-hp. Stirling boilers and steam driven gas compressor with a capacity of 130,000 cu. ft. per hour.

Ore., Coquille—Dam—An election is to be held in the near future for the voting of $50,000 in bonds for constructing a dam for increasing the city's water supply.

Ore., Portland—Pipe—The Willamette Iron and Steel Works has been awarded a contract for furnishing 9,000 tons of nine-ft. steel pipe to be used in the eight and a half mile pipe line which will carry water to the new plant of the Portland Railway, Light and Power Company at Cazadero.

Wash., Seattle—Radio — The Kilbourne and Clark Manufacturing Company has been awarded the contract for reconditing and remodeling 225 radio compass receivers for the Navy Department. This is the third large contract of this type received by the company during the last few months.

Wash., Chehalis—Mill — The Wasson Bros.' shingle mill near here was completely destroyed by fire, with a loss of $50,000. It is reported that the plant will be rebuilt.